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TREATISE

ON THE

DISEASES OF THE HEART,

AND

GREAT VESSELS.

BY

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Translated from the French,

BY

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TO

JAMES H. PIERREPONT, M. D.,

This Translation is respectfully inscribed as a memorial of that affability and kindness which have ever marked his attentions upon the sick; and as a testimony of respect for his superior discernment and skill in the discrimination and treatment of disease—

By his early Friend and Pupil,

Charles W. Chauncy.

Portsmouth, N. H.

INTRODUCTION

BY THE TRANSLATOR.

The physician, like the divine, should be endowed with all knowledge, not all the knowledge of every science, but so much of it as to be able to understand the moral and physical phenomena which occur in man, in a state of disease; hence we obtain a mirror, which reflects the diseased condition of the system or constitution exposed to our observation.

Our actual knowledge of disease, then, consists of an interpretation of all the phenomena, moral, physical, and psychological, as they actually exist in the morbid state of the body.

Such knowledge is acquired by directing our attention to those general principles of induction, analogy, association, and experience, which are found to be consistent with that great moral principle of truth which pervades the whole human family.

Such knowledge includes especially the study of

anatomy, physics, pathology, metaphysics, and the general or moral history of man, and may be greatly improved by experience and observation, and even perfected by attending to the topographical phenomena and organization of disease.

The physician's general knowledge, then, cannot be too extensive; but his knowledge of disease must depend, for the most, part upon the accuracy with which he notes morbid phenomena, and traces their analogy with his previous observations and the effects produced after death. The pathological anatomy, then, of all the regions of the body should be the ultimate object of inquiry. With this view I have undertaken to supply, as far as I am able, the deficiencies in this particular department of American Medical Literature, by such translations from foreign works as portray the actual state of disease in the various regions of the body; so that when the diseases of every part of the system have been studied, we shall be familiar with the morbid phenomena of every part, and the combinations of morbid phenomena which compose a complete body of medical anatomy.

As the heart is the most central organ of the body, we think it would be most proper to begin with the study of the peculiar diseases of that organ; for this purpose we have selected Bertin, as containing a more complete exposition of those diseases than any other work with which we are acquainted, unless

it be Laennec, who is too critical and positive for reference respecting the actual progress of any particular disease of that organ. In fact, it can scarcely be said that we are in possession of any complete and perfect history of the diseases of the heart. The French pathologists have prepared the way for a more thorough and satisfactory investigation of this class of diseases; and the plan devised by Bertin is, perhaps, better calculated to attain the object which has been proposed than any other. Corvisart was the first who understood the proper method of studying these diseases: the present author, however, was a pupil of Corvisart, and not only had the advantage of his discoveries, but of the generally improved state of medical science among his cotemporaries. Armstrong, Farr and Abercrombie, have done much in this department of medical inquiry; but Cruveilhier, Lerminier, Andral, Louis and Bouillaud, have effected much more. Bertin deserves to be ranked in this class of authors. His classification is anatomically correct, and he has investigated the diseases of the appropriate textures of that organ so accurately, that it is hardly possible to conceive of a case for which we may not find a parallel in the present work.

It is somewhat singular that among the numerous translations and original works which have issued of late years from the American press, no work has as yet appeared which can justly be entitled to be con-

sidered a monograph on these diseases, unless it be that portion of Laennec's work which treats of these diseases. A translation of Corvisart was published in Boston, in 1819; but that work, though valuable for occasional reference, has been nearly superseded by the sagacious remarks and criticisms of Laennec. Among the authors of the present day, who have given us information on the subject, Burns has been the principal author referred to for many years. His work, though highly meritorious for the physiological views it contains, has fallen considerably behind the improved state of medical pathology. Dr. Latham, of St. Bartholomew's Hospital, has published, in the London Medical Gazette, the substance of some highly interesting lectures which he delivered before the College of Physicians, and Mr. Hope has lately published some exceedingly valuable essays on the subject; but there is no work, on the whole, more justly entitled to rank as classic, than Bertin's. It is only necessary to dip into that part of Laennec's work which treats of the diseases of the heart, to estimate satisfactorily the repute and favour which that great physician uniformly entertained for the writings of Bertin. These two philosophers have differed on some of the nicer points of pathological inquiry, which gives more interest to their speculations, and renders them mutually interesting and necessary for the investigation of truth.

The author of the original work, a translation of which is herewith presented to the medical public, was for more than twenty years principal physician of one of the most popular hospitals of Paris, during which period he was more or less engaged in collecting the materials of the present work, in which he was assisted in his medico-pathological researches by M. Dejaer, chief physician of the Hospital of Liege, and M. Bouillaud, author of an accurate and beautiful work on encephalitis, and Editor of the present work, to whom the author was indebted for a considerable number of cases, and a great many valuable remarks and observations added to the manuscript confided to his special care and direction.

M. Bouillaud, while house physician to the Hospital Cochin, conceived a peculiar taste for the study of the diseases of the heart, and has analyzed, with greater precision than has hitherto been done, the phenomena peculiar to each disease, and thus placed the theoretical and physiological part of the work on a level with the anatomical.

In order that we may have a more definite view of the improvements and discoveries made by M. Bertin in this branch of knowledge, we shall insert the principal part of the report of Dumeril and Pelletan, to the Royal Academy of France.

In regard to the translation of the work, I have endeavoured to give a literal and exact interpretation

of the facts described by the author, without having sought to attain that smoothness and polish of style more commonly found in works of imagination. The principal merit of the original work depends upon the great number of cases described, and the anatomical classification of their arrangement.

CHARLES W. CHAUNCY.

NEW YORK,
May 21st, 1833.

INSTITUTE OF FRANCE,

ROYAL ACADEMY OF SCIENCES.

Paris, January 15th, 1821.

THE Perpetual Secretary of the Academy of Natural Sciences, certifies that the following is extracted from the proceedings of the sitting on Monday, January 15th, 1821.—

"From the time of Morgagni to the present day, the best medical writers, and all those who have contributed to the progress of science, have taken pathological anatomy for the basis of their researches. To speak only of the diseases of the heart, we might mention the labours of Lancisi, Senac, MM. Portal, Corvisart, Kreysig, Burns, Testa, Meckel, Hodgson and Laennec.

The memoirs of M. Bertin, committed, by the Academy to MM. Pelletan, Dumeril and myself, is not inferior, in any respect, to the writings of any of the authors spoken of, and we might claim for M. Bertin, in many particulars, a priority of observation and inquiry respecting many of the organic lesions of the heart, which he communicated to the

Academy at a period when some of the most esteemed works on the subject had not been published.

In fact, when the author presented his first memoir, on the organic diseases of the heart, on the 10th of August, 1811, thickening of that organ had only been partially distinguished from the dilatation of the parietes, and from enlargement of the cavities denoted by the term aneurism; it appears that the reverse, and entirely opposite state, as regards anatomy and physiology, had been confounded with the term thickening. Simply augmented nutrition of the muscular parietes of the heart does not appear to have been distinguished from those defections, or more profound alterations, induced by the nutrition of that organ. About this time M. Corvisart described these several alterations by the term *active aneurism*, without determining the circumstances, or the anatomical characters, which have a tendency to diminish and even destroy that active state, whether by the softening or hardening of the parietes, or of the muscular columnæ of the heart, and of a multitude of other alterations resulting from an augmented nutrition, which frequently also thickens the parietes without rendering them hypertrophous. It was also at the same period that M. Portal considered this thickening of the heart only as a transformation into a substance unnatural to the muscular texture of that organ; and had thus been led to regard that anatomical condition as invariably of a passive nature.

It was at this period that M. Bertin, after having been ten years employed in the hospital confided to his care, in collecting, comparing, and collating numerous cases, confirmed by inspections of the body,

attempted to demonstrate, in his first memoir, that the aneurism did not give an exact idea of the dilatation of the heart; that the activity too generally attributed to a species of dilatation of the parietes, accompanied with thickening, should not be admitted, excepting in cases of increased nutrition of the muscular tissue; that this increased nutrition does not always coexist with dilatation; that simultaneous dilatation and thickening do not constitute augmented activity of the muscular parietes, since the author had in vain sought to find these anatomical dispositions in a great number of observations; that frequently, on the contrary, the cavities of the heart were very much diminished (a disposition the first discovery of which appears to have appertained to M. Bertin;) and that at last the morbid activity of the heart became weakened in consequence of its complication, especially when the thickening, at first partaking of the characters of the muscular texture, but losing afterwards its density, consistence and colour, becomes hard, of a deep brown colour, softened and relaxed; or when it presents an inverse disposition, that is to say, hardening of its texture, met with most frequently in the pillars and columnæ of the cavity of the ventricles.

Such are the most remarkable results of the first memoir, confided to M. Corvisart by the Academy, in 1811, to make a report, but which his numerous occupations did not allow him time to present to you. We shall go on with the analysis of the other memoirs of M. Bertin, which should only be considered as the development of the ideas and observations contained in the first part of his work.

Each of the forms of hypertrophy, considered more particularly in reference to the left ventricle, appears especially to have been thoroughly investigated in the three memoirs successively presented, about a year since, to the Academy. Thus M. Bertin, following in his second memoir the same analytical methods, begins with an exposition of the facts and observations proper to establish the first kind of hypertrophy, as follows: *thickening, without dilatation of the left ventricle.* This alteration is first considered in its primitive state, then with the different complications which frequently accompany it. Each of these observations, presented with the preparations, to several societies of medicine, is followed by reflections from which we may expect new and important discoveries.

The object of the third memoir is to discover and establish the symptoms and organic alterations which characterize *hypertrophy of the left and right ventricles, with diminution of their cavities.*

Senac has already consecrated one of the articles of his beautiful work to the diminished volume, narrowness of the cavities, or shrinking of the heart.

Malpighi and Fabricius Hildanus speak of small, wrinkled and shrunken hearts; Corvisart notices the constriction of the left or right ventricle, with diminution of the cavities, produced by a shortening of the parietes; occurring in consequence of indurations or cartilaginous and osseous alterations of the tricuspid or mitral valves.

In the observations which M. Bertin has collected, he has observed that the volume of the heart was not sensibly altered; that the ventricles were, however,

more fleshy than in the natural state, and that the muscular thickening was evidently formed at the expense of the cavity, without, however, appearing to present a trace of any alteration whatever.

His third memoir contains six cases, remarkable as well in relation to the description of the symptoms as to the details of pathological anatomy.

The fourth is consecrated to the investigation of *hypertrophy of the parietes of the heart, accompanied by dilatation.* The author has recognised this morbid disposition in ten of the cases detailed. He there explains the different degrees of hypertrophy of the left ventricle, the right ventricle and the auricles; he remarks that it is far from being uniform in the parietes of the heart, in the septum of the ventricles and auricles; that it varies in the columnæ carneæ, and at different points of the parietes of the cavities; and that it offers different degrees, accordingly as the dilatation is greater or less than the proportional dimensions of the corresponding cavities.

The various degrees of alteration are described with much care by M. Bertin.

From the labours and researches which this author has presented to the Academy, he has been enabled to ascertain, 1st. That in the different species of organic lesions, the muscular texture may be more or less altered. 2nd. That the heart becomes thicker by dilatation, or without dilatation. 3rd. That thickening of the parietes offers two different anatomical characters, increase or alteration of nutrition, sometimes existing simultaneously, at other times individually. M. Bertin proves that this thickening by hypertrophy, the principal object of the memoirs which

we have been analyzing, offers three different forms, two of which had not been, before the year 1811, attached to the doctrine of the diseases of the heart, and which we have already noticed; that is to say, increased volume of the cavities of the heart, and diminution of the cavities caused by hypertrophy. 5th. He thinks that the denomination *aneurism* is not applicable in any respect to these two kinds of alterations. 6th. He affirms that it is necessary to be very careful not to call hypertrophies *active dilatations*, because the energy of the parietes is singularly modified, sometimes even much weakened, either by the hardening or softening of the thickened parietes, and by all the other complications. 7th. He thinks, finally, that thickening, with or without dilatation of the parietes, should be distinguished according to its anatomical characters, and not according to the physiological phenomena which are so numerous and variable.

These various pathological views, since confirmed by recent and commendable labours, but which we must pass over, are especially adapted to impart a knowledge of the organic diseases of the heart, respecting which M. Bertin has been one of the first to fix the attention of observers. They are not, undoubtedly, new in the present day; but if we refer to the period when the author presented his first memoir, of which the others are only a development, we shall see that his labours are far from having been without their utility for science.

The distinctions admitted by the author have been deduced from a great number of well-observed facts, and which have required a great deal of sagacity and

patience of anatomical research. The author has always been careful to confine himself to an exact description of facts, and to compare the symptoms with the various results furnished by pathological anatomy.

We think, also, that the labours of M. Bertin will powerfully concur to promote the knowledge of these diseases; we think, indeed, they have already served that purpose, and that his *co-labourers* will do no more than justice towards M. Bertin, by receiving his contributions favourably, and recognising the anteriority of his researches in numerous organic alterations of the heart.

It will, at all times, give us the greatest pleasure to be permitted to communicate the results of the labours of a man whose father was counted among the most distinguished members of the Academy, and who has left so many tokens of remembrance of anatomical science.

(Signed) DUMERIL, PELLETAN, PINEL,
Reporters.

The Academy approves of the report and adopts its conclusions.

Certified in conformity to the original.

Perpetual Secretary, Counsellor of State, Officer of the Royal Order of the Legion of Honour.

B. CUVIER.

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INTRODUCTION.

Anatomy, physiology, and pathology, have each of them such intimate relations and close connexions with each other, and mutually derive from each other such useful light, that they constitute, perhaps, less three absolutely distinct sciences, than three branches of one and the same science. Reasons, the truth of which no one can for a moment doubt, have induced us to prefix to the history of the diseases of the heart an abridged description of the structure and functions of that organ. We shall devote the first part of our introduction to this description, and in the second, present some historical researches on the diseases which form the subject of the work.

PART I.

ANATOMICAL AND PHYSIOLOGICAL CONSIDERATIONS RESPECTING THE HEART.

§ I. ANATOMICAL CONSIDERATIONS.

The heart is a hollow organ, principally of a muscular nature, having the form of a cone reversed: it

ing is known by the name of *foramen Botalli.** The cavity of the ventricles, separated from each other by a common division, presents the orifices of the pulmonary arteries and aorta. These orifices, as well as those by means of which the auricles and ventricles communicate with each other, are furnished with membranous folds, which have been distinguished by the name of *valves.* The valves adapted to the auriculo-ventricular orifices have their free edges cut into a great number of dentations, and, farthermore, deeply divided into three principal lingual flaps in the right ventricle, and into two only in the left ventricle. It is in consequence of this arrangement that the name of *tricuspid* or *triglochyne* valve has been given to that valve which occupies the edge of the right auriculo-ventricular orifice, and the name of *bicuspid* or *mitral* to the left auriculo-ventricular valve. When these valves are raised, they close the auriculo-ventricular orifices almost hermetically, like valves. These orifices, the circumference of which is elliptical, are bordered by a line or whitish zone, more apparent on the side of the auricles; and which appears owing, in part, to the presence of a small quantity of fat situated under the internal membrane, and in part to that of a tendinous ring, imbedded in the substance of the heart. The valves annexed to the arterial orifices of the heart, are known by the name of *semilunar* or *sigmoid valves:* the *aortic* valves, to the number of three, like the *pulmonary* valves, are larger and thicker than the latter. They are all arranged in such a manner as to oppose a sufficient ob-

† Hole of Botallus, or foramen ovale.

stacle to the retrograde course of the blood in the ventricles. Their free edge presents at the middle part a small tubercle which is called the tubercle of *Arantius*.

The muscular substance of which the heart is essentially composed, is denser, firmer, and of a deeper red than that of the *voluntary* muscles, and is composed of numerous fibres, the arrangement of which has been for a long time an impenetrable enigma for the anatomists. Steno was the first who exerted himself to unravel that inexplicable muscular network; his efforts were unsuccessful. The attempt of many anatomists succeeding Steno, were scarcely more fortunate. Finally, in these latter times the ingenious researches of MM. Wolff, Duncan and Gerdy, have succeeded in unravelling the tortuous and circumvolute fibres of the heart. It results from the researches of these anatomists, that the ventricles are formed of many muscular layers placed one over the other, the number of which differs in each of them:* besides, the direction and extent of the fibres which constitute these muscular planes, are not the same. The fibres of the external layers are, in general, oblique, from above downward, from before backward, and from right to left: the middle are arranged in the contrary direction, and the more profound, which are united together to form species of projecting columnæ on the interior of the ventricles, are, for the most part, longitudinal.† According to a law disco-

* These muscular layers are six in number for the left ventricle, and three only for the right ventricle, which explains why the first is much thicker than the second.

† The superficial layers occupy the whole circumference of the ventricles in passing round the apex of the heart, whilst the others diminish in length

vered by M. Gerdy, all the fibres, whatever may be their length, situation, or direction, are disposed in the forms of *loups*, the convexity of which looks towards the apex of the heart, and which are more or less superficial at one extremity, and deep-seated at the other; so that the external and internal fibres are, in fact, the same, being reversed after having passed through the substance of the ventricle. The extremities of these muscular loops are uniformly inserted into the base of the heart, in the circumference of the various auricular and arterial orifices of the ventricles, either immediately or by the tendons attached to the auriculo-ventricular valves.

The auricles have a structure equally complicated: they are composed of two fleshy layers, the one external and the other internal. In the right auricle the muscular tissue is less abundant than in the left, and leaves intervals between the fibres, where the internal and external membrane of the heart are in immediate contact. This disposition is very remarkable in certain individuals affected with a considerable dilatation of the right auricle, with thickening of its fleshy fibres.

The muscular fibres of the heart, uniting in fasciculi, form on the interior of that organ what the anatomists call the *fleshy columns of the heart*. These columnæ differ in the ventricles and in the auricles, and even in each of its several cavities. They are much more developed in the ventricles than in the auricles; those of the right ventricle are more numerous and stronger than those of the left; the left au-

and breadth in proportion as they become deeper; hence the reason why the ventricles are thicker at the base than the apex.

ricle offers them only on its appendix, whilst the right is provided with them also on the right and anterior side. The fleshy columnæ are interwoven with each other in a variety of ways, and give to the internal surface of the ventricles an appearance similar to a sort of network the meshes of which are of unequal size, and the filaments of various lengths. Some of these muscular pillars, detached from the heart in the whole of their middle part, are only held by their extremities. Many of the fleshy columnæ give origin to a multitude of small tendons, which are fixed on the free edge of the auricular valves: this arrangement permits us to regard these fleshy fasciculi as the *tensor muscles* of the several valves to which they are attached.

The tendons of which we have spoken, are not the only part of an albugineous nature which the heart possesses. In fact, we find the tendinous, ligamentous, or fibrous tissue, at the point of union of the ventricles with the auricles, and with the aorta, and pulmonary arteries, and in the duplicature of the valves themselves. This tissue forms, at least in great part, the valvular circles which we observe round the auricular orifices, in the form of whitish zones. It is this tissue, which, by becoming converted into a cartilaginous or osseous texture, determines the diseases which we shall hereafter describe.* The natural consistence of the tendinous circles, situated at the orifices of the heart, very much resembles that of the cartilages or fibro-cartilages.

* See the chapter which treats of the indurations of the valves and the contraction of the orifices.

The external membrane of the heart is a dependence of the serous fold, which enters into the composition of the *pericardium*, of which it covers the external or fibrous lamina.

The internal membrane of the heart, continuous with that which covers the interior of the vessels, participates in the right cavities with the characters of the internal membrane of the veins, and in the left, with the properties of the internal membrane of the arteries. It is this which forms, by folding on itself, and around the fibrous texture indicated above, the valves of the heart.

We find very little cellular tissue in the composition of the heart, most of the muscular fibres of which are united by prolongations of the same nature with them. There is no cellular membrane, excepting on the surface of the organ, where it may be found underneath the serous membrane, in the clefts which separate the ventricles; and those which are found at the junction of the ventricles, unite with the auricles.

The arteries of the heart arise from the aorta immediately after its origin; they take the name of coronary, and are two in number, one going to the right and the other to the left. The larger branches divaricate, and spread over the whole surface of the organ, from the base to the apex, while the smaller branches merely ascend toward the auricles. The veins of the heart have almost as many branches as the arteries, but afterwards unite to form a common trunk, generally denominated the great coronary vein. Numerous small branches communicate individually with the right auricle, and constitute so many small *coronary* or *car-*

diac veins. The lymphatic vessels of the heart are very numerous; they follow the course of the blood-vessels, and are afterwards collected in two principal branches, one of which passes before, and the other behind the aorta. The nerves of the heart come from the plexus formed by the branches of the trisplanchnic or great sympathetic, and the pneumo-gastric nerve. They have been accurately described by Scarpa, who has demonstrated, contrary to the opinion of Behrends and other anatomists, that these nerves send out numerous branches into the proper texture of the heart.

The heart presents numerous varieties of volume, according to age, sex, and other circumstances. It would be very important, if we could determine, precisely and geometrically, the normal size of the heart, the absolute or relative thickness of the parietes of the various cavities and their natural capacity; but this is almost impossible. It is the experienced eye only that can distinguish whether or not a heart possess the proportions conformable to those of health. The comparative dimensions laid down by M. Laennec appear to be sufficiently accurate; we shall, therefore, give them in this place: "The heart, including the auricles, ought to have a volume a little inferior, equal, or very little superior in size to the fist of the subject. The parietes of the left ventricle ought to be a little more than double the thickness of that of the parietes of the right ventricle:* they ought not to yield when cut upon with the scalpel. The right ven-

* This should be understood only in reference to the adult heart, for in the fœtus and the very young child, the thickness of the left ventricle does not much exceed that of the right.

tricle, a little larger than the left, presents more voluminous fleshy columnæ, and, notwithstanding the lesser thickness of its walls, should flatten inward after the incision. Reason indicates, and observation proves, that, in a healthy subject of a good constitution, the four cavities of the heart are very nearly equal to each other. But as the parietes of the auricles are very thin, and those of the ventricles are much thicker, the result is, that the auricles form hardly one-third the whole volume of the organ, or about half that of the ventricles."* These assertions, it is true, seem contradictory to observations made on the dead body; where we almost constantly find the right cavities larger than the left. But it is to be observed that this increased thickness of the right cavities, is not so much a normal condition as the result of some disease, or, at least, of the distention which these cavities have undergone, when, during the anguish of the agony, the blood, incapable of permeating the lungs, accumulates in the cavities, and distends them. We should add, that the difference in capacity, which we so frequently find after death in the two hearts, is invariably observed, according to the experiments of Legallois, in animals which have died of asphyxia: in the latter case, however, the disproportion is considerably greater. However it may be, these experiments will serve to prove that we ought not to consider the equal capacity of the right and left cavities as a truth perfectly demonstrated; and will not permit us to consider a moderate inequality of capacity as the result of a pathological condition.

* De l'Auscultat. Mediate, tom. ii. p. 270 et 279.

§ II.—PHYSIOLOGICAL CONSIDERATIONS.

And, now that we are acquainted with the anatomical structure of the heart, let us pass on to the study of the functions of that important organ, and let us inquire into the function which it performs in the mechanism of the circulation. The following is what we have gathered from experience and observation on this subject. The auricles and ventricles perform, successively, alternate contractions and dilatations. The two ventricles contract and dilate at the same time: so it is with the auricles. The first of these movements is essentially of an active nature, and is similar to the contraction of the external muscles, and is generally called the *systole;* the second is, most probably, of a passive nature, like the relaxation of the external muscles, after contraction, and is called the *diastole.* The effect produced by the diastole is evidently to suck up or respire the blood; whilst that of the contraction is to throw this fluid out of the cavities in which it is introduced during the diastole. The auricles, by their contraction, cause the blood to pass into the ventricles; these, by contracting in their turn, project the blood from the right ventricle into the pulmonary artery, and from the left into the aorta. If we ask the reason why, during the contraction of the ventricles, the blood does not pass into the auricles, as it does into the arteries above-named, we should reply that the reflux of the blood into the auricles would, in fact, take place if the mitral and tricuspid valves, the true organized valves, did not perfectly close the auriculo-

ventricular orifices, at the time the ventricles are about contracting. In like manner, the blood does not fail to retrograde, as it were, into the ventricles during the contraction of the aorta and pulmonary artery, if the sigmoid valves are not opposed to it in closing the arterial orifices of the heart. The reflux of which we have been speaking here, will be so much the more inevitable without the presence of the valve, that, during the contraction of the ventricles, these auricles dilate, as, during that of the arteries, the ventricles, of themselves, dilate. We shall find, in the progress of this work, that pathology furnishes us with numerous facts to prove the great importance of the valves in the mechanism of the circulation. We shall see that the lesion of them produces very great disturbance of the circulation; and, consequently, sudden death, if the medical art do not furnish means to remove it. The anatomical disposition of the valves is sufficient, of itself, to demonstrate in what manner the column of blood passes from one heart to the other. It is indubitable, in fact, that, after this arrangement, the blood must circulate from the auricles into the ventricles, and from these into the arteries; afterwards to return, by means of the veins, into the auricles, and so on. It is farther evident that the same phenomena absolutely occur in both hearts, in the right and in the left heart.*

But the blood which circulates from one of these hearts to the other, is very far from being the same

* The contractions of the left ventricle are stronger than those of the right, only in consequence of a greater thickness of its parietes; increased thickness and force are quite necessary, since the distance to which this ventricle must propel the blood is much greater than that of the right.

in each of them. This fluid, in fact, undergoes great changes by traversing, on the one side, the capillary system of the lungs to pass into the left heart; and, on the other side, the capillary system of all the organs, to return to the right side of the heart. In the first of these passages, the blood is found in contact with the air, acquires new properties, becomes, as it were, vivified, and fitted to excite, and nourish all the organs; in the second passage, on the contrary, the blood becomes *disarterialized*, if we may be allowed to use such an expression, loses the stimulating, nutrient, and vivifying power with which it had been animated, and does not resume it, excepting when it returns to imbue the lungs. The two kinds of blood flowing through the cavities of the heart, are distinguished by giving the term arterial to that which passes through the left cavities; and venous, to the blood flowing into the right cavities. We did not wish to pass over in silence the modifications presented by the blood in the two hearts, because, perhaps, they may serve to explain some of the pathological phenomena which we shall have occasion to speak of hereafter.

At the moment of the contraction of the ventricles, the apex of the heart strikes the left lateral parietes of the chest, between the cartilages of the fifth and sixth ribs. This phenomenon appears singular at first sight, since it seems to indicate a kind of elongation of the heart; while the systole, which accompanies it, consists of a contraction, by means of which this hollow muscle becomes shortened in every direction. We can, nevertheless, account for the phenomenon when we reflect, that, during the contraction

of the ventricles, the apex, which is moveable, becomes extended and bent, as it were, on their base, which is more fixed, and represents a sort of point of support. Farthermore, as the auricles dilate, during the contraction of the ventricles, we may conceive how this dilatation may carry the heart forward, and concur in the production of the phenomenon in question.

It is not only by sight that we are able to ascertain the movements of the ventricles and auricles; we can, also, study them, by means of touch, and especially through the medium of hearing. M. Laennec, to whom science is indebted for this new mode of exploration of the pulsations, insists, with reason, on the superiority which it possesses over all the others; and the only one, in fact, in connexion with that of touch, which can be practised on man.

We shall now proceed to an analysis of the phenomena observed in auscultating the pulsations of the heart, either with the ear alone, or the ear assisted by the instrument invented by M. Laennec. We ought to say, in advance, that these pulsations have been analyzed with so much skill by that celebrated observer who first studied them in this connexion, that we have scarcely any thing to add to what has been already published on the subject. We shall examine them, as he has done, in relation to their rhythm, sound, shock, and extent.

1. *Rhythm of the Pulsations of the Heart.*

Hearing, as well as sight and touch, prove that the auricles contract simultaneously, as well as the ventricles; and that the contractions of the latter alter-

nate with those of the former. In fact, if we apply the ear attentively, we shall presently distinguish, during the pulsations of the heart, a double sound; one of which, duller and isochronous with the pulsations of the arteries, announces the contraction of the ventricle; while the other, louder and clearer, results from the auricular contractions. There does not exist any appreciable interval between the contractions of the ventricles and the auricles; so that the observer of little experience frequently cannot distinguish more than one sound, and takes the one which accompanies the auricular contractions for a kind of reverberation of that which is produced by the ventricles: but, with a little practice, nothing is more easy than to discriminate the double sound, or the tic-tac to which we refer.

The duration of the sound, the kind of clicking which accompanies the contraction of the auricles, is evidently shorter than that of the *ventricular sound;* consequently, the duration of the auricular contractions themselves is less than that of the ventricular contractions; a fact which had been merely suspected by Haller. Between the sound of the auricle and ventricle, we observe a very distinct interval of repose, although its duration is very short. This is followed by a sound which indicates the contractions of the ventricle, to which succeeds the auricular click, and so in succession.

The respective duration of the contractions of the heart has been determined by M. Laennec in the following manner: of the total duration of time necessary for the successive contractions of the various parts of the heart, one-third, at most, or one quarter

is taken up for the systole of the auricles; a quarter, or a little less, by an absolute repose, and half, or nearly so, by the contraction of the ventricles.

This auscultation, it is manifest, can only apply to the most common state; for there are cases to which it is not applicable. It is in this way, for example, that the interval of repose which the heart enjoys will be more or less prolonged, accordingly as the contractions are either slower or quicker, more approximated or more remote.

However this may be, the preceding remarks demonstrate that the heart, far from being in a state of continual movement, offers alternations of repose and action, like all the other muscles, in such a manner, that, according to the approximate calculations above established, out of the twenty-four hours, the ventricles have twelve hours' repose, and the auricles eighteen.*

2. *Of the Sound of the Pulsations of the Heart.*

We have already noticed this sound in the preceding article; we have seen that it is double, and that that which accompanies the contractions of the ventricles is more prolonged, but duller than the one heard during the systole of the auricles. We shall add here, that the sound heard in the inferior part of the sternum appertains particularly to the right cavities, whilst that of the left cavities is more especially heard between the cartilages of the fifth and sixth ribs; that, farthermore, the sound of the right cavities is to be heard more particularly in

* This calculation supposes that the cavities of the heart are entirely passive during their dilatations.

the whole right side of the chest, and that of the left cavities in the corresponding side of the thorax.

3. *Of the Shock or Impulse of the Pulsations of the Heart.*

It is evident that it is not only by means of hearing, but also through the intervention of touch or sight, that we can obtain an idea of the impulse of the heart. If, then, we place this phenomenon among those which may be recognised by the practice of auscultation, it is that in this mode of exploration, the ear in immediate or mediate contact with the thoracic parietes becomes a species of *sense of touch*, or, at any rate, performs the same functions. Finally, the hand, alone, or armed with an instrument adapted to transmit the movement, will be sufficient to study the characters of the shock determined by the contractions of the heart.

We appreciate the intensity of this shock by the force with which the hand or any other part applied to the region of the heart is raised, struck or repelled. In some individuals, those of a nervous temperament, for example, this impulse is very well distinguished at first sight, and sometimes produces an extensive movement, which raises the thoracic parietes, the epigastric region, and even the clothes covering those parts.

4. *Of the Extent of the Pulsations of the Heart.*

The extent of the pulsations of the heart should be considered relatively both to the shock and to the sound. In relation to the first, this extent is very inconsiderable, and is found circumscribed in the

precordial region itself, and in individuals somewhat corpulent, the impulse is scarcely sensible, even in this region, as if it had been deadened by the soft parts situated in front of the heart: in relation to the second, that is to say, in relation to the sound, the extent of the pulsations of the heart is not limited to a space so narrow. Full flesh is a circumstance which absorbs, in some measure, a part of the sound, whilst emaciation is favourable to its propagation: also, while, in the first case, the space in which the pulsations of the heart may be heard is sometimes restricted to the precordial region, in the second they are heard in the whole anterior part of the chest. There are, also, other circumstances which favour the transmission of the sound of the pulsations of the heart, and increase it in a very remarkable manner: this may be observed, for example, in the case of hepatization of the tubercles of the lungs, or effusion into the cavities of the pleura, &c.

The knowledge of the phenomena which we shall presently point out is of the highest importance for the physician desirous of treating diseases only after having exactly determined the diagnosis. We do not hesitate to say, that the happy discovery of auscultation has diffused, within a few years, more light on the diagnosis of the diseases of the heart than all the other modes of exploration had done for two centuries: this may easily be conceived. In fact, the sensible and local signs are the only ones which furnish positive data respecting the diagnosis of diseases; but, heretofore, these signs were reduced to those transmitted by sight and touch; and, as the heart, hidden in the depth of the chest, is almost completely with-

drawn from these two senses, it is very clear why the diagnosis of these diseases has remained so long in profound obscurity. Auscultation, in creating for us, at it were, a new medical sense, has at last succeeded in dissipating this long-continued darkness. In the present day, instead of the eye, we employ the *seeing ear*, if we may be allowed such an expression; which, if attentively applied, collects all the symptoms of the heart's motions, and renders the diagnosis of the diseases of that organ as easy and as sure as that of the chirurgical diseases the best known. Thus, augmentation, or impulse of the pulsations of the heart, denotes hypertrophy; the sounds of the same pulsations, clearer, stronger, and more extensive than in the natural state, announces, with certainty, a dilatation of the heart; thus, the sound of a bellows, or a file, heard during the contractions of that organ, is a symptom which does not permit us to mistake the existence of contraction of the orifices, &c. Universal respect, therefore, is due to the ingenious observer, who has enriched medicine by the discovery of a mode of exploration, the precious and fruitful results of which we shall take pleasure to record!

After having studied the action of the heart, after having analyzed its most sensible phenomena, it is interesting to direct our regards more profoundly, and to determine what is the principle of the movements of the *great spring* of the circulating system. We shall not mention the numerous hypotheses which have been proposed on this subject; but we shall say something of the opinions which experience and observation have led us to adopt. Now, this experience and observation would appear to have demonstrated

that the principle of the contractions of the heart resides in the nervous system. But where is the nervous centre which presides over these contractions? Legallois, supported by beautiful experiments, has advanced that the heart derives its principle of motion from the medulla spinalis; a conclusion which is defective only in this, that it exaggerates the influence of the medulla spinalis, on the contractions of the heart. This influence is not indispensable for their production; it is not even the immediate principle, for the heart beats in the fœtus deprived of the medulla spinalis, as has been proved in the observations related by M. Lallemand, in his thesis. Besides, Wilson, Philip and M. Clift have seen, in their experiments, the pulsations of the heart survive the destruction of the medulla, especially when the animals were young, and the medulla was destroyed slowly. It is in the ganglionic system of the nerves, or the great sympathetic nerve, that we are to find the seat of that principle which governs the contractions of the heart. If the motions of the heart cease soon after the medulla spinalis has been destroyed, it is owing to the intimate connexion existing between all parts of the nervous system, in general, and the reciprocal dependence which they have on each other, a dependence which is more fully disclosed, in proportion as the animal appertains to a class more elevated in proportion to its youth. We believe, then, that we shall be able to admit that the heart receives, through the intermedium of the plexuses furnished by the great sympathetic, the principle of its movements, and that, in the natural state, the presence of the blood in the cavities of the heart, is the agent

destined to excite these plexuses, as the will stimulates the nerves which convey motion to the muscles submitted to its will. If it be true, that the action of the heart be thus under the immediate influence of the great sympathetic, we may easily conceive how it happens that the movements of that organ are not subjected to the influence of the will;* although the passions of the soul have such a powerful influence over them. Such is, indeed, the intimate relation of the affective faculties with the movements of the heart, that most philosophers regard that organ as the seat of the passions; and that, in all languages, the word heart is frequently employed as synonymous with *sentiment, affection, soul, passion.* Whether this be true or not, it is incontestable that all the active passions powerfully modify the movements of the heart; some of them excite, others augment, and some convert them into violent palpitations; others distend, or momentarily release them, and sometimes permanently. In this respect, we might say, that of all our modes of expression the heart is the most faithful; and that it is the interpreter of all our most sincere emotions. But the moral affections are not the only ones which react, as it were, upon the heart. This organ, eminently sympathetic, perceives, and, as it were, participates in the purely physical affections of our organs; so, also, it is sufficient to interrogate these pul-

* Stahl, it is true, cites, the example of Captain Townsend, who could govern, at will, the contractions of his heart. But such a fact, in spite of the authority of Stahl, appears, at least, doubtful. It agrees, in other respects, very well with the system of this great physician, who, by placing under the influence of the soul, all the organic phenomena, thus assimilated the movements of the heart with those of the voluntary muscles.

sations, in order to appreciate the state of calmness or agitation of the soul: it is, also, sufficient to explore them, to ascertain in what state the body is found, as the physician practices every day in *feeling the pulse.*

But if, on the one part, the heart feels with so much vivacity the affections and sufferings of all the other organs; on the other hand, it does not influence them, in its turn, in a less remarkable manner, either in the physiological or the pathological state. In fact, is it not the heart, which, like an inexhaustible fountain, distributes to all the organs the fluid necessary for their well-being and their functions; and which gives to them, as it were, life with the blood which it sends to them? Is it not the heart which impresses, by its impulses, the arterial systems of all parts of the body, excites their actions, and contributes, perhaps, to the production of animal heat? Do we not observe the most alarming symptoms to accompany the diseases of the heart of the most trivial character, as contraction of the orifices, for example? Lastly, is not *sudden* death the consequence of syncope or cessation of the action of the heart? and do not real and general death frequently commence with a lesion of that organ?

These last remarks are well calculated to demonstrate the very great importance of the part performed by the heart in the human fabric; which Corvisart calls, with reason, the great *spring;* and Bordeu has not exaggerated this importance, when, in his metaphorical language, he has told us, that the heart is one of the beauties of the vital tripod.

In the mean time, if we reflect that the heart is, at

once, the principal instrument of the circulating apparatus, and an organ of sympathy and expression; if we reflect, consequently, that all the causes which trouble, disturb, or disorder the circulation, propagate their influence to the heart itself; that the passions of the soul react on it; that the most common diseases, such as fevers and inflammations, produce a more or less distinct shock; that numerous agents, introduced into the current of the circulation,* irritate

* Among the numerous causes calculated to produce diseases of the heart and large vessels, Lancisi, Morgagni, Corvisart, and others, have enumerated the various kinds of virus, and particularly the venereal virus. They have considered the vegetations, which are sometimes developed on the valves of the heart, especially, to be of a syphilitic nature; this assertion, however, appears to us too general. We have opposed this opinion, in a memoir presented to the Society of the Faculty of Medicine, of Paris, in 1812. Long experience in a hospital especially appropriated to the treatment of venereal diseases, and in another, where subjects affected with those diseases are not received, have apprized us that the vegetations spoken of, are very rarely met with in individuals who die of syphilitic disease; while it is not unfrequently observed in those persons who have died of some other disease, and who have never suffered from venereal disorders. Farthermore, syphilis attacks such a great number of persons, it so frequently coincides with various organic lesions, that it is not surprising that some of them should have been considered as having been produced by it; but if it be certain, as Lancisi, Morgagni, and many other commendable authors have remarked, that the diseases of the heart and vessels have become more frequent since the fatal appearance of syphilis; is it not to exaggerate its influence, to attribute so much to it in the production of those diseases; and, if organic lesions appear to have been less frequent before the appearance of the venereal disease, is it not reasonable to suppose that this circumstance may be attributed to the fact, that medical observers could not recognise those diseases so well at that time as they are able to do since; thanks to the progress of pathological anatomy. We do not wish to deny the influence of the venereal virus in the production of certain organic lesions; but we can assure our readers, that the effects of this virus have been greatly exaggerated; especially relative to the development of the vegetations and excrescences of the valves. Our opinion will appear so much the more probable, as the numerous vegetations observed on the skin, and the orifices of the mucous membranes, are frequently of so

its tissue, more or less, we conceive, with difficulty, how it happens that the heart, of all the organs of the body, is the one most frequently disordered. And, without speaking of the purely sympathetic affections of the circulating centre, how numerous are its proper, essential or primitive, diseases! Its various tissues become inflamed, isolately or simultaneously; its fleshy substance becomes relaxed or contracted, softened or condensed, thinned or thickened, and sometimes bursts; its cavities are found dilated or contracted; its orifices are sometimes enlarged, or become the seat of a contraction which is opposed to the free passage of the blood: this fluid coagulates in its cavities, and the fibrine, concreting into globules, becomes elongated or tubular, and produces those various concretions, known by the name of *polypi* of the heart, and to which the ancients attributed so great a part in the various diseases of that organ; finally, the fluid secreted after inflammation, becomes, in its turn, a cause of disease, after having been the effect. Its concreted and organized portion floats in the pericardium, is deposited on its surface, is flattened into the form of membrane, forms layers more or less thick, which unite the corresponding surfaces of the pericardium, or forms rough villous products which the ancient authors mistook for hair, and which have given origin to the fabulous stories about hairy hearts. But enough has been said on a subject which we propose to consider hereafter in all its details: let us return, then, to the object of this introduction, and pass on to the second part.

doubtful, syphilitic character, that they frequently resist anti-venereal treatment, and can only be removed by excision.

PART II.

HISTORICAL SKETCH OF THE DISEASES OF THE HEART.

If it be true, that pathological anatomy and physiology are the great luminaries of medicine; and, if it be true, that without them, this science would languish in eternal obscurity; it is not among the physicians of antiquity that we are to find any positive knowledge respecting the pathology of the heart and the aorta; since the civil, political, and religious laws of the Greeks and Romans, prohibited, under severe penalties, the dissection of human bodies.* The ancient physicians, therefore, could only have known the external and general phenomena by which those diseases are manifested: as these phenomena, however, are common to many other pathological affections, they would be led, necessarily, to confound the latter with the former; which they, in fact, did; under the vague and generic term *asthma* or *dyspnœa*. This confusion prevailed even for a long time after that pathological anatomy had begun to be cultivated; and this was inevitable, for asthma is, in fact, the predominating symptom of all the severe diseases of the

* The Egyptians have had some anatomical notions respecting the diseases of the heart; which will not be at all surprising to those who are acquainted with the fact, that anatomy was cultivated in Egypt, where the kings themselves, according to Pliny, dissected bodies, with a view of stu-

thoracic viscera. Lancisi* and Morgagni,† had clearly perceived, that the diseases of the heart frequently determine symptoms, which the physicians of that day inconsiderately referred to the affections of the pleura and lungs; a mistake which many practitioners committed even in the time of Corvisart, and which is, perhaps, even committed in our own days, as well as the error of an opposite description.

The long ages of barbarism, which succeeded the fall of the Roman empire, were the iron ages of medicine, in general, and of anatomy, and pathological physiology, in particular. We are not indebted to them for a single idea of any importance respecting the diseases of the heart and large vessels.

The Arabs, among whom medicine, exiled from Europe, found a temporary refuge, did not add any discovery worthy of being mentioned in the history of these diseases. It was not until some time after the revival of letters in Europe, that facts, relative to the organic lesions of the heart, were collected; but while the physicians of antiquity were only able to observe the external phenomena of these lesions, most of the observers of the fifteenth or sixteenth century, on the contrary, did not even mention the

dying diseases: "Ab regibus quoque corpora mortuorum ad scrutandos morbos insecabantur. (Nat. Hist., i. xix. c. 5.)

* "Occultæ multorum malorum causæ sunt investigandæ quæ ipsis cordis vasis dilatatis vel obstructis, repositæ sunt. Nonnulla suffocativa astmata, pectoris hydropisis uno ex fonte pendent, inæqualibus videlicet vasis cordis."—(Lancisi, de Motu Cordis, &c.)

† Morgagni, speaking of the various causes of dyspnœa, says, "Earum precipuæ et sæpius quam aliqui putant, aut ad aquam spectant effusam, aut ad cordis, majorumque vasorum dilatationem." We shall presently see that the opinions of Lancisi and Morgagni are incorrect.

symptoms of those alterations of the heart, which they had discovered in their anatomical researches. Their labours, too, were almost destitute of any thing favourable to the progress of medicine. Baillou, who first employed the expression *aneurism* to distinguish dilatation of the heart, is almost the only one to whom the reproach, of having neglected to relate the phenomena connected with the lesions of the heart which he had observed, does not apply. Lancisi, Valsalva, and Albertini, the worthy successors of Vessalius, Nicholas, Massa, of Charles Etienne, de Baillou, and others, contributed much to the treasures of science, by their valuable researches. Lancisi established, for a symptom of the dilatation of the right cavities, the pulsations of the jugular veins, and he consecrated the expression aneurism, which Baillou had already employed to distinguish the dilatation of the heart. Valsalva and Albertini have rendered themselves famous, by the method which they proposed for the treatment of aneurism, which yet retains their names.

Worthy inheritor of the observations of his master, and possessing a greater number, which he had collected himself, the celebrated Morgagni, the father of pathological anatomy, consecrated to the history of the diseases of the heart, the whole of his 17th and 18th Epistles, and many other portions of his immortal work. He brought to the study of these diseases that profound sagacity, that admirable penetration, that spirit of analysis and luminous discussion, which will for ever ensure him the first rank among the most illustrious of the medical profession. The work of Senac, on the structure and diseases of the heart, presents us with a complete picture of all the knowledge

up to that time, on this branch of pathology; and that work, honoured with the suffrage of Morgagni, will remain, for a long time, among the number of classic works.

About the commencement of the present century, however, an illustrious physician reconstructed, for the most part, the edifice raised by Senac. Rich with the observations of his predecessors; rich in his own observations; richer yet in his genius, and in that wonderful sagacity with which nature had so liberally supplied him, Corvisart, the Morgagni of France, composed, under the modest title of "*Essai sur les Maladies et les Lesions Organiques du Cœur et des gros Vaisseaux*," a work for which he deserves the praise of all medical Europe. Since then, Testa, in Italy, Burns, in England, Kreysig, in Germany, have published works which have not thrown into shadow the work of Corvisart, although these authors have really diffused new light on these diseases. They have, especially, explained the effects of inflammation on the various changes of structure met with in the heart or the great vessels. Finally, in these latter times, M. Laennec, by means of the ingenious method of exploration which he has discovered, has brought to the diagnosis of the diseases of the heart, a light which none of his predecessors were able to throw around it. Notwithstanding the labours of these celebrated physicians, the subject has not been exhausted: it remains to determine more precisely, by numerous facts, the various forms of *hypertrophy* and *dilatation* of the heart, for the division into *active* and *passive aneurisms*, proposed by Corvisart, is far from embracing the whole of them; to clear up, by

the light of analysis and physiology, the various phenomena, which attend the several diseases of the heart; it remains to discriminate from among the general symptoms which have been assigned indifferently to all these diseases, those which appertain to any particular one; it remains to dissipate the gross errors which authors have committed in this respect; it remains to ascertain the best method of distinguishing them, that we may not confound, as has been for a long time done, a lesion, purely symptomatic, with the principal and essential disease; and not to take the effect for the cause; it remains to inquire into the true nature of the numerous anatomical alterations of diseased organs, and to study the effect of inflammation in the production of such alterations; finally, it remains to establish the proper method of treatment for those diseases which Corvisart regarded as necessarily mortal; which he would not have considered as such, had he possessed more precise ideas respecting their nature, and the surest means of ascertaining their origin. Such are the deficiencies we have attempted to supply in the work at present published; happy should our efforts not be entirely lost, either to science or humanity.

TREATISE

ON THE

DISEASES OF THE HEART, &c.

BOOK FIRST.

ON THE DISEASES OF THE AORTA.

GENERAL OBSERVATIONS.

The works lately published on the diseases of the blood vessels, whether in France, Italy, England, or Germany,* have undoubtedly much improved our knowledge of this important part of medical doctrine. We can say, however, without the fear of being contradicted, that science yet stands in need of a good monograph on inflammation of the vascular system, and of the aorta in particular. In fact, many authors, while describing, with sufficient exactness, the various anatomical changes met with in the aorta, have paid no attention to the important influence of inflammation in their production. This deficiency we shall endeavour to supply. We shall, therefore, begin with the history of the inflammation of this great artery, including the inflammation of the internal membrane of the heart and pulmonary artery, which so frequently accompany it. We shall endeavour to

* See the works of M. M. Corvisart, Laennec, Scarpa, Burns, Hodgson, Kreisig, &c.

prove that most of the pathological alterations of these parts noticed by authors, are really the consequence of either an acute or chronic inflammation of their texture. However, as some of these lesions are themselves the true causes of disease, or, rather, of themselves constitute the diseases, we think it will be best to make several divisions of the subject. In the first chapter, we shall treat of inflammation of the aorta, internal membrane of the heart, and pulmonary artery, with their effects; for example, redness, effusion of coagulated lymph, thickness or hypertrophy of the parts affected, ulcers, perforations, ætheromatous, cartilaginous, calcareous, earthy, and tubercular formations. In the second chapter, we shall take up the subject of aneurism of the aorta, and its varieties: we shall then investigate the relations which subsist between this disease and aortitis: the third chapter shall be devoted to the contractions of the aorta; and the fourth will be appropriated to the investigation of the indurations and vegetations of the valves, and the contractions of the orifices of the heart.

CHAPTER I.

ON INFLAMMATION OF THE AORTA, INTERNAL MEMBRANE OF THE HEART, AND PULMONARY ARTERY; AND ITS CONSEQUENCES, SUCH AS ULCERS, PERFORATIONS, CARTILAGES, AND CALCAREOUS DEGENERATIONS, &c.

Aortitis must be considered the principal subject of this chapter, although we shall include in one view these three phlegmasiæ, because they are situated in a continuous system, and often exist together. Now, inflammation may affect separately or simultaneously the three membranes of which the aorto is composed, and the cellular tissue which unites them reciprocally with each other: it seems, however, to manifest an unfortunate preference for the internal membrane; either because it is more immediately exposed than the rest to irritating causes, or because its striking analogy with serous membranes peculiarly disposes it to inflammation.

In the first article we shall present some cases of acute and chronic phlegmasia of the aorta, and in the second we shall trace the general picture of the disease.

ARTICLE I.

Observations on the Phlegmasia of the Aorta, Internal Membrane of the Heart, and Pulmonary Artery.

1st, Observations on Acute Aortitis, and Phlegmasia of the Internal Membrane of the Heart.

Case I.—A man who had just returned from Jamaica, where he had suffered severely from dysen-

tery, was attacked with violent pneumonia, which, in five days, brought him to the grave. The cavities of the pleura contained a large quantity of lymph and serum; the pericardium was covered with lymph; the cells of the lungs contained a bloody serum, and the bronchiæ were much inflamed. All the thoracic viscera bore traces of acute inflammation the most intense, which had also extended to the aorta, the internal membrane of which was of a deep red colour, and presented an effusion of coagulable lymph in its cavity. The effused lymph was closely united to the internal membrane, and part of it had passed even into the left subclavian, which was almost entirely obliterated.

This case, taken from the excellent work of Mr. Hodgson on the diseases of the arteries and veins, is a very remarkable example of acute aortitis. The same author has had some other opportunities of observing this disease, particularly in a case where the ligature of the femoral artery, after amputation, produced inflammation of the internal membrane of this vessel, which extended even to the heart. He relates that the same accident had been observed in analogous circumstances by Messrs. Cline and Abernethy. Observers, until lately, have paid but little attention to this disease of the aorta. Nevertheless, Boerhaave and Morgagni* make mention of it without having had a very correct idea of its nature. M. Portal† has, likewise, observed the same disease in a young man who died some days after the recession of an acute eruption: the thoracic aorta was very red, swollen, soft, and its internal membrane, near the diaphragm, much

* Morgagni, Lib. ii. *Epist. Anat. Medica.* xxvi. art. 36.

† *Course d'Anatomie Medicale*, tom. iii. p. 127.

swollen and softened. MM. Franck, Corvisart, Laennec and Recamier, have also collected some cases of this pathological condition. Mr. Hodgson endeavours to establish a difference between redness of the internal membrane of the aorta, observed by these last authors, and that which occurs in acute aortitis. But it seems to us that Mr. Hodgson has not presented any conclusive proof in support of his opinion. M. Laennec, also,* while he allows that some doubt at present exists respecting the nature of this redness, is disposed to regard it as inflammatory: such is also the opinion we have formed, an opinion the truth of which seems to be demonstrated by the numerous cases we are about to offer.

Some of the numerous observers, whom we shall cite in the present work, in speaking of the redness or phlogosis of the internal membrane of the aorta, have not observed the analogous state of the internal membrane of the heart.† This silence would have been rather surprising, if we had not known with what facility this lesion, on which we had not fixed our attention might be unveiled to observation: the lesion of which we are speaking is, however, very frequently accompanied with redness of the aorta, as we shall presently prove by facts. We are not ignorant that other physicians have observed this redness of the internal membrane of the heart, and among others, we shall quote Dr. Baillie, who has seen the valves of the veins affected with real inflammation and covered with coagulable lymph.

* There is a species of redness, of which we shall presently speak, which M. Laennec does not think of an inflammatory nature.

† M. Laennec mentions this redness of the internal membrane of the heart and pulmonary artery.

Case II.

Redness and Albuminous Exudation of the Internal Surface of the Aorta. (Aortitis.)

George Andrew Steller, thirty-seven years of age, cooper, of a strong but highly lymphatic constitution, had been sick five or six months, when he entered the hospital at Cochin, the 5th of October, 1823, in the following state. Orthopnœa, oppressed breathing on the least motion, and while lying on the right side; pulse scarcely perceptible in the left arm; vibrating, strong, regular, unfrequent in the night: leucophlegmasia. The pulsations of the heart calm and regular; those of the ventricles prompt, those of the auricles slower, accompanied with a slight rustling sound which is not continuous: both of them heard in the whole left side, and to a great extent in the right. Respiration strong, *puerile*, accompanied with a mucous and sibilant rattle in the whole right and superior part of the left side; egophony manifestly existing in the lower part of this last, more developed than the former, which gives a low flat sound. *Diagnosis.* Hydro-thorax of the left cavity, hypertrophy of the heart.

Notwithstanding the employment of bleeding, blisters, aperients, digitalis, &c., the patient died in the manner of individuals affected with hydrothorax, on the 22d of the same month in which he entered the hospital.

Examination of the Body thirty-six hours after Death.

Each cavity of the chest contained about a pint of serum, the left lung was pushed upward and backward by the effused fluid, and the heart, which was enormously *hypertrophied.* The mucous membrane of the

bronchiæ was red, especially in the last divisions of the left. The pericardium was adherent to the heart by a false membrane, partly organized, and partly not; the aorta, of a natural caliber, was strewed, in the whole extent of its internal surface, with very small yellow distinct spots, not ossified, situated outside the internal membrane, which was red and covered with a layer of reddish coloured albumen, about a third of a line in thickness. At the base of one of the aortic valves was observed a small osseous tubercle: the pulmonary artery and its valves presented nothing peculiar.—The gastro-intestinal mucous membrane was red and injected. The redness of the internal membrane of the aorta, the albuminous false membrane, with which it was covered, are two characters, which do not permit us to mistake true inflammation. We request the reader not to forget the results of the cadavenc autopsy of the two preceding subjects; we shall rarely henceforward meet with the plastic and albuminous *epanchement* just spoken of. The reason may be easily conceived: the epanchement, as soon as formed, is found in contact with the current of the blood contained in the aorta, and must, of necessity, frequently be carried along with it, and leave scarcely any trace of its existence.

We shall return, farther on, to the consideration of the small yellow spots situated underneath the internal membrane of the aorta.

Case III.

Pleuro-Pneumonia: Phlegmasia of the Internal Membrane of the Heart and the Aorta.

Antoinette Lamongeis, aged sixty-four, domestic, of a good constitution, entered the hospital Cochin the

11th of April, 1822, saying she had been sick four days. She presented the symptoms of *bilious pleura-pneumonia:* violent headach and little delirium, vomiting, tongue blood-red at the edges; yellow tint of the face, pleuritic stitch; sputa moulded; great oppression; respiration almost extinct at the base of the chest, &c. Notwithstanding the employ of general and local bleeding, blisters, &c., the patient died on the fourth day after entrance.

Examination of the Body thirty-six hours after death.

We found a phlegmasia of the bronchia, pleura and lungs.

The pericardium contained two or three spoonsful of a bloody fluid: it was less injected at the left, than at the right side, which corresponded with the side of the lung, most inflamed. The heart, of ordinary volume, was filled with blood partly liquid, and partly coagulated; the mitral valve was of a deep red colour; it was the same with the tricuspid, which was in a fungous state, and fixed to the walls of the ventricle by tendinous filaments. The aorta, at its commencement, as well as its valves, was red; these were strown with small superficial ulcerations, and earthy, or fibro-cartilaginous concretions.

In this case, we find, besides redness of the internal membrane of the aorta and the heart, the yellow spots, indicated in the preceding case, the first rudiments of the ulceration of that membrane certainly: with these signs, it is not difficult to recognise a phlegmasia; and we may also add to these anatomical and positive proofs, the collateral evidence derived from the co-existence of an inflammation of the pleura, lung, and bronchial tubes.

Case IV.

Julie Martin, aged twenty-one, dressmaker, of a good constitution, was taken sick with a pleuro-pneumonia, eight days before her entry into the hospital Cochin, the 2d of June, 1822. General and local bleeding had been employed, without success; the patient sank about a month after the commencement of the phlegmasia. In the latter stage of the disease, the sputa exhaled an infectious and almost gangrenous odour.

Examination of the Body—twenty-two hours after death. The pleura and both lungs were inflamed: a gangrenous abscess was found in the right lung, &c. —The cavities of the heart contained large clots of blood, white on the exterior, rose colour within, and prolonged into the aorta and large vessels; the internal membrane of the right cavities, and especially that part reflected on the valves, offered a brownish red colour: this colour was much less intense in the left cavities; the heart in other respects was well formed.—The pericardium contained a little turbid serum, in which were floating some thin shreds, delicate as cobweb.

Case V.

Redness of the Internal Membrane of the Heart and Aorta (Aortitis.)

Charles Dalmon, aged seventy-nine, married; of a strong constitution; had been sick fifteen days from the time he entered the hospital Cochin, 3d July, 1822. He complained of pain in the abdomen, and a breath and mouth so fetid that he could hardly support the odour. Had been troubled with spontaneous vomiting of bitter bile, and vomited the soup

and sweet wine which they made him take. Had a cough for a long time, and suffered from pulsations of the heart, when he took a little too much exercise. A high fever, he said, occurred every day at irregular periods. However this may be, we observed on the day after his entrance at the evening visit, high fever, skin hot, headach, pulse frequent, strong and vibrating; beatings of the heart very powerful; desire for wine to support the strength. (Gum water electuary, diet.)

The fever continued with the same intensity the following days; torpor soon occurred, and on the seventh blisters were applied to the legs.

8th. The patient comatose; the left arm *contracted*, and in endeavouring to extend it, the patient makes slight groans, and mournful cries: the pulse preserves its force and frequency. Finally, on the 10th, the patient died after long continued rattles, and with symptoms, which announced cerebral congestion.—

Examination of the Body, twenty-four hours after death.

The meninges presented some traces of inflammation; the case of the cranium and the ventricles contained a large quantity of reddish coloured serum, the cerebral substance was injected, and rather soft; the stomach and small intestine were filled with green coloured bile, and presented red points. The four cavities of the heart, the aorta and the other large vessels contained a large mass of blood, partly liquid, and partly coagulated; the texture of the heart was soft, flabby and brittle; the membrane which covers it, internally, was of a deep red, especially about the valves; the internal membrane of the thoracic and abdominal aorta, was red, and strewed with osseous

earthy layers.—The spleen, softened, broke down to mush, on the least touch; the liver, on the contrary, was of a black colour, and denser than in the natural state.

We shall presently see that aortitis is accompanied with diseases of an evidently inflammatory nature; we shall now proceed to exhibit the same affection in subjects who have died of idiopathic fevers.

Case VI.

ATAXO-ADYNAMIC FEVER.*

Death nine days after entrance into the Hospital.—Redness of the Internal Membrane of the Heart and large Vessels; Intestinal Ulcers; Redness of the Bronchial Mucous Membrane, &c.

Virginie Aubart, twenty-one years of age, of a lymphatic temperament, was brought to the hospital Cochin the eighth of November, 1822. She was in a

* The phenomena of the general system, and those which occur in particular parts, or organs, will always be the subject of dispute between the exclusive physiologist and pathologist. The great mass of facts, collected of late years, concerning particular organs, will lead the pathologist to overlook the sympathetic and nervous phenomena of the animal frame; while the physiologist may also err, by confining his attention to idiopathic or general disease.

It occurs to us that the phenomena of fever, as well as of every other disease, should be studied in reference to one whole and undivided system, in which, both general and local sympathies exist, and which must all form one clear and definite idea, before we can rightly understand the nature of disease, or prescribe a remedy adapted to the general condition and want of the system.

Without wishing to depreciate the just value of those writers who trace the phenomena of fever to particular organs, or of those who have sought for a perfect knowledge of the disease in the general affection of the system, we think the period has arrived when general pathological anatomy, or the general anatomy of the systems, (according to Bichat,) should be studied with the same ardour with which the pathological investigations of the compound organs have been pursued.

Until this rich domain be thoroughly explored, we cannot expect to explain the mysteries of pyretology. The interest of this subject has led us

state of prostration and delirium, which did not permit her to give any account of the circumstances which preceded and determined her disease. The other principal symptoms observed, were the following: lips and teeth covered with a black crust; paleness of the face and tongue, which is dry, hard and apparently burnt; urgent thirst; pain and swelling in the parotid region; abdomen sensible and contracting on pressure; skin dry, discoloured and heated; prostrate on the back; pulse much accelerated, small and weak; (140 pulsations in a minute,) delirium loquacious; picking of the bed-clothes; cough frequent with rumbling mucous rattle. (Blisters to the legs,

thus far away from the principal object of our remarks, which was to give concise definitions of the several fevers mentioned by the French authors.

From the earliest period of medicine the morbid state of fevers of intense excitation has been characterized by symptoms of inflammation only, or by inflammatory symptoms allied with a superabundant secretion of bile or mucus. The progress of observation has led to the discovery, that the excitation is much increased, sometimes in the stomach, sometimes in the secretory apparatus of the gastro-intestinal mucous membrane, which has led to the distinction of fevers into several kinds. Thus the *angiotenic fever* of the French authors is a sthenic disease, and consists of pure inflammatory irritation of the vascular system, disconnected with any other disease, or affection of any particular organ, and is synonymous with synocha. The *meningo-gastric* fever is accompanied by bilious phenomena, and depends upon an irritation of the mucous membrane of the digestive organs. The *adeno-meningeal* or mucous fever is attended with the same phenomena, but modified by increased mucous secretions.

The *adynamic fever* is an asthenic disease or synochus, attended by putrid phenomena produced by some change in the properties and qualities of the blood. The *ataxic fever* is the effect of a cerebral or cerebro-spinal irritation, and is the slow nervous or malignant fever of the old English writers.

These terms designate all the varieties of febrile diseases, excepting the hectic, but they may all be more or less complicated; hence we have the expressions of inflammatory gastric (or causus of the ancients,) gastro-adynamic, and mucoso-ataxic fevers, besides the gastro-adynamo-ataxic, the mucoso-adynamic-ataxic, and the ataxo-adynamic, which embraces all the symptoms of that remarkable variety called typhus.

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sweetened gum-water, diet.)—The blisters produced no effect.—The patient died in the ataxo-adynamic state, on the 17th, nine days after his entrance.

Examination of the Body twenty-three hours after death.

Externai Appearances.—Cadaveric rigidity; muscles nearly of a natural colour; redness, injection and swelling of the cellular texture, and of the sub-maxillary ganglions; infiltration of the left abdominal extremity.

Circulatory and Respiratory Organs.—On each side of the thorax the visceral pleura adheres to the parietal by a soft and recent cellular layer. Both lungs are crepitant, pale anteriorly, red and swollen posteriorly; the mucous membrane of the air passages is red and injected; the pericardium contains a good deal of red-coloured serum; the heart is well formed, but a little *soft* and *flabby;* its cavities are filled partly with liquid, and partly with coagulated blood; their internal membrane, especially of the right cavities, is red; the aortal valves, the internal surface of the aorta and the branches going from it, present a beautiful scarlet colour, which is not owing, at least in appearance, to vascular injection, but seems rather a kind of stain: the same colour is observed, also, in the pulmonary artery and its valves. The internal membrane, of the venous system generally, is of a brownish red. The deep-seated veins of the abdomen are infiltrated and obstructed by a long fibrinous clot, which is solid, has existed a long time, and extends as far as the origin of the vena cava.

Digestive Organs.—Externally the stomach and intestines are very white, excepting that various red patches, corresponding to internal ulcers, may be ob-

served upon the convolutions of the small intestine. The spleen is twice as large as in the natural state, of a very soft texture and reddish brown colour, which becomes red on exposure to the air; the liver, rather large, is, in other respects, healthy.—The stomach and small intestine contain a great quantity of bile, which has deeply coloured their mucous membrane: this, in the stomach, presents superficial red points; in the duodenum, and beginning of the jejunum, it is pale, but as we advance towards the coecum appears deeply injected, and of a red colour. Many ulcers are disseminated about the end of the jejunum and commencement of the ilium, where no trace of the injection can be found. Towards the termination of the ilium, the ulcers are more numerous, extensive and deep; they have destroyed a large portion of the ileo-coecal valve; around many of them, may be observed small ulcers and whitish coloured granulations. The coecum, and ascending colon, present also numerous ulcers, and thin mucous membrane, is, for the most part pale, in which appear small, white, or reddish pustules, which give it a knotted and speckled appearance. There is in the coecum, also, a large opaque spot, which appears to be a cicatrix. The arch of the colon, its descending portion, its sigmoid flexure, as well as the rectum, are contracted, and contain some rather solid, fœcal matter, but present nothing except a slight rosy tint. The mucous membrane of the pharynx and œsophagus is pale.—The mesenteric ganglions are red and swollen.

Encephalic Organs.—The cerebral membranes are a little infiltrated, especially at the convexity of the cerebrum, where they are white and lacteous. We

find a small quantity of serum at the base of the cranium, and in the ventricles; the texture of the brain is rather soft, and evidently injected.

Among the numerous organs which have offered us manifest changes of structure, we have directed our attention particularly to such as have relation to the heart and the vessels. The internal membrane of these organs has presented to our view a redness, which seems to us a sufficiently positive character of its inflammation. We believe we shall be able to say as much of the softening and of the feeble adhesion and flaccidity of the heart. The changes above mentioned, are not confined to the particular cases already observed, we have met with them in more than twenty individuals, who have died of acute or chronic idiopathic fevers. We considered it our duty to relate the above case in detail. It will be sufficient for our present purpose, however, to mention such circumstances as directly refer to our present subject, obtained from cases collected with the same exactness and attention.

Case VII.

Turpinat, a young man of twenty years of age, a mason by trade, of sanguine, bilious temperament, had been sick seven days before his entry to the hospital, the 20th May, 1822. He presented all the symptoms which constitute the ataxo-adynamic fever of authors. Leeches, blisters, and the usual methods, were employed without success. He died, fifteen days from the time he entered the hospital.

On opening the Body, the heart was found flabby and soft, and the cavities somewhat enlarged. The internal membrane was found to be of a deep red colour.

Case VIII.

Georges Bousserat, twenty-six years of age, printer, thin, pale, nervous, in other respects of a good constitution, had been sick eight days, when he entered the hospital Cochin, 3d September, 1822. He presented the symptoms of fever called *ataxic:* twelve days after his entrance he expired. *The Body was examined* twenty-four hours after death, and presented many changes, among which we shall notice only the following. The heart was well formed, but flabby, the texture rather soft, and the internal membrane of a reddish brown colour.

Case IX.

Lewis Francois Grape, twenty-four years of age, water-carrier, of a sanguine bilious temperament, had been indisposed for a month, and kept to his bed three days, when he was brought to the hospital Cochin the 14th of July, 1822. He was affected with the *adynamic fever* of authors; notwithstanding the employment of antiphlogistics, he died the sixth day after entering the hospital. *The Body was examined* twenty-six hours after death. The heart was flattened, flabby and almost empty, the valves reddish brown; the internal membrane of the aorta rose-coloured.

Case X.

Jacques Blater, of a strong constitution, thirty years of age, had been sick fifteen days before he entered the hospital Cochin, on the 16th October, 1822. He died, at the end of twelve days, of a fever similar to the preceding; accompanied, however, with ataxic and phrenitic symptoms, so violent as to resemble

spasms of hydrophobia. *Body examined* thirty-six hours after death: heart well formed, robust and firm, containing some liquid and black blood. Internal membrane of the cavities of a brownish colour, &c.

Case XI.

Genevieve Brule, 22 years of age, married, of a good constitution and regular habits, brunette,—had been sick for fifteen days, but was confined to the bed only nine, when she entered the hospital Cochin, 25th June, 1822. She died in the course of twenty-five days, with symptoms of *ataxo-adynamic fever*. *Body examined* twenty-two hours after death. Heart remarkable for its extreme flaccidity, walls of the left ventricle very soft, and, as soon as they were cut into, flattened down. Internal membrane red, as well as that of the aorta. We shall confirm the opinion we have entertained of inflammation of the internal membrane of the heart and large vessels, by several cases of acute disease, denominated, by some, idiopathic fever, and by others gastro-enteritis; we have observed in these cases softening and a remarkable flaccid state of the heart's structure. We shall now adduce some new cases of the same disease, coinciding with inflammation of the most important organs.

Case XII.

Martin-Jean-Louis Plouquet, thirty-seven years of age, of a good constitution, entered the hospital Cochin the 9th of January, 1822, and said he had been sick for three months. He presented slight symptoms of peritonitis; but, on the fourth day after his entrance, became most alarmingly ill, and died the

night following. *Autopsy* thirty hours after death. Many traces of severe peritonitis, especially purulent depositions, in the abdominal cavity. The pericardium contained a large quantity of reddish serum. Internal membrane of the aorta of a beautiful red colour, which washing would not remove.* This colour resembled a tincture, and was not owing to the presence of injected vessels.

The following is a case of phlegmasia of the internal membrane of the heart and aorta, coexisting with symptoms of general congestion, and suppurative inflammation of the liver.

Case XIII.

Jean Cogniasse, twenty-two years of age, brown complexioned, strongly constituted, entered the hospital Cochin 30th of July, 1822. This patient came from the Hotel-Dieu, where he had been treated for an œdematous erysipelas of the face, and cured by repeated purgatives. He had been bled some time before at la Petié, for malignant fever. At his entry we observed the following symptoms: Colic pains, copious watery discharges, pain in the right hypochondrium, ardent thirst, cough, flat sound and absence of respiration at the lower part of the right side; depression, expression of anxiety, prostration, alternate chills and sweats. The most powerful antiphlogistics were employed without effect. The complexion became more and more yellow, and the patient died with symptoms very much resembling those of yellow fever. *Autopsy* twenty-four hours after death. Intestinal canal, and especially the arch of the colon,

* After maceration in water for some time, this colour was completely dissipated.

enormously distended with gas; about two glasses of red liquid, almost purely blood, in the peritoneum, which is uniformly red, dry and somewhat viscous; five abscesses in the liver, with pultaceous softening of the substance surrounding the purulent depositions; the small intestine, uniformly injected, contains a large quantity of clotted and liquid blood, which has, in some measure, stained the mucous membrane red; the pleura is deeply injected, and infiltrated, in some parts, with blood; its cavity contains a little blood-coloured serum; the mucous membrane of the bronchial vessels is in contact with a blood-coloured mucus of a deep red; the pericardium contains a moderate quantity of deep-yellow-coloured serum; the heart is voluminous and robust, of a soft flabby texture, and contains clots of blood, buff-coloured in the right cavities, and black in the left: the membrane which covers these cavities, especially the left, presents a deep brown colour, which contrasts with the scarlet-red observed in the thoracic and abdominal aorta.

In the following case the phlegmasia occupies only the internal membrane of the heart.

Case XIV.

Charles Garnier, fifty years of age, having suffered frequent catarrhal affections in the course of his life, entered the hospital Cochin the 26th of October, 1822. He complained of cough, and had a rheumatic affection, and was on the point of departing when he was suddenly taken with angina-pharyngo-laryngia, to which he became a victim on the fifth day.

Autopsy twenty hours after death.—Inflammation and suppuration of the pharynx, amygdalae, larynx and inferior half of the right lung; the pleura, espe-

cially the right, offers chronic adhesions; the right portion of the pericardium is intimately united to the corresponding pleura, the pericardium is uniformly injected, that portion which covers the right side of the heart is strewed with white-coloured plots, thicker on the auricle than the ventricle, easily detached, and are probably nothing more than false membranes; that portion which covers the left side offers nothing similar, and what appears remarkable is, that the pericardium of this side, exteriorly, does not adhere to the pleura-costalis; the heart is well-proportioned: the right cavities are distended with clots of blood, for the most part white, in which we may say the vessels begin to be organized; the internal membrane of the heart is red.

It is not only in cases of inflammation, accompanied by acute fever, that we have had occasion to observe aortitis; we have met with it, also, in cases of inflammation and slow fever, of which we have numerous examples.

Case XV.

Marie Peraudin, twenty-two years of age, firmly constituted, entered the hospital Cochin on the 19th of August, 1822, about three months after confinement, presenting symptoms of the second stage of phthisis pulmonalis. In the mean while, pectoriloquy the most evident, soon declared itself in different points of the chest; and the patient, consumed by hectic fever, died, tranquilly, about two months and a half after she entered the hospital.

Autopsy thirty-six hours after death.—We shall lay aside in this case and the following, the description of the changes found in the thoracic and abdominal

organs, and report only those which directly interest us here. No one can be ignorant, that the changes which the nature of this work obliges us to pass over in silence consist principally of tuberculated degeneration of the pulmonary structure, tubercular excavations, more or less numerous, and extensive; and ulcerations of the mucous membrane of the intestines, &c.—Here is what we furthermore found in the young woman of whom we are speaking: the pericardium was adherent to the pleura, and contained a flocculent serum of a beautiful golden colour; it was injected, particularly that portion which covers the heart. The heart, well formed, but rather soft, was distended by clots of blood, its internal membrane, principally on the valves, offered a brownish red colour which intermingled, by a kind of gradation, with bright red and scarlet extended on the internal membrane of the aorta, where it was distributed in long stripes, prolonged into the coronary arteries, in those of the extremities and in the carotids, where it has generally been less apparent. The cerebral arteries preserved their natural colour; but the pulmonary artery and branches were red; as well as the venous system in general.

This redness did not seem to be owing to vascular injection: the cellular tissue surrounding the arteries and veins was red, and abundantly supplied with blood vessels; and the red colour of its texture round the veins, increased the intensity of that of the internal membrane.

Case XVI.

Josephine Mottier, forty-five years of age, widow, thin, and feebly constituted, was in the last stage of

pulmonary phthisis when she entered the hospital Cochin the 10th of September, 1822. She entertained great hopes of recovery, and scarcely thought herself sick. Death occurred on the eighteenth day after she entered the hospital.

Examination of the Body forty-eight hours after death.

The heart is rather larger than the fist, and its texture is soft, flabby and easily torn; its internal membrane, is red, as if it had been soaked in blood; the valves are of a deep brownish red colour.

Case XVII.

Peter Canut, tailor, twenty-four years of age, large, lymphatic and feebly constituted, entered the hospital Cochin the 27th July, 1822, with symptoms of phthisis pulmonalis, of which he died in six weeks after entrance.

Examination of the Body thirty hours after death.

The heart about the size of the fist, was pale, and had a milky appearance on its external surface; the internal membrane of the aorta was of a scarlet colour.

Case XVIII.

Jean Nicholas Mougenot, aged thirty-one, died at the hospital Cochin of phthisis pulmonalis, the 17th of August, 1822. At the opening of his body, we found pleuritic false membranes, tubercles, pulmonary excavations, &c. The internal membrane of the heart, especially about the valves, was of a violet red colour.*

* See this case more in detail, in No. 90.

Case XIX.

Marie Jean Jobin, aged sixty-five, entered the hospital Cochin on the 5th of December, 1822. She was affected with phthisis pulmonalis, which appeared to us complicated with disease of the heart. She died seven days after entrance.

Autopsy. The lungs were crowded with tubercular granulations almost purulent. The internal membrane of the bronchia and pulmonary vessels is of a deep dull red. The heart is wrinkled, and the right cavities, as well as the pulmonary artery, offer a deep red colour, almost black in the right auricle; the red colour exists in a less degree in the left cavities: this colour passes insensibly to a yellow tint in the aorta.

Case XX.

Redness of the Valves of the Heart and internal Surface of the Aorta.

Jean Baptiste Grente, aged thirty-eight, glover, entered the hospital Cochin on the 14th of November, 1822; appears very feeble. She was attacked with phthisis pulmonalis, and died about three weeks after entering the hospital. Ten hours after death *the body was examined.* The heart was smaller than the fist; the cavities for the most part were well proportioned; the valves presented a red colour; the internal membrane of the aorta was of the same colour in a less degree.

Case XXI.

Jean Blin, aged twenty-one, seamstress, had been brought to bed about four months, and entered the

hospital Cochin on the 12th of March, 1822, affected with a congestive abscess, complicated with phthisis pulmonalis; she died the third month after entrance.

Autopsy thirty hours after death. Heart of natural size, texture soft; aorta and large vessels contain coagulated blood; internal membrane of the heart, especially at the orifices, of rather a deep red.

Case XXII.

Bright red colour of the internal membrane of the aorta.—Jaques Bouelo, aged 20, attacked with phthisis pulmonalis, entered the hospital Cochin 20th March, 1822, and died at the end of five weeks. The heart and origin of the aorta contained clots of blood. The internal membrane presented a bright red colour.

Case XXIII.

Etienne Salmer, aged twenty-five, gardener, had arrived to the last stage of phthisis, when he entered for the second time the hospital Cochin, the 18th of April, 1822. He died five weeks after. Among a great number of pathologic lesions, presented *on opening the body* thirty hours after death, we remarked, that the internal membrane of the aorta immediately beneath the sternum, was of a bright red, almost scarlet.

Case XXIV.

Catherine Neven, aged forty-two, cotton dealer, a strong constitution, affected with phthisis pulmonalis in the advanced stage, entered the hospital Cochin the 20th of May, 1822. Fifteen days after, she died.

Examination of the Body forty hours after death.

Lungs tuberculous. Heart gorged with blood, flabby and soft, its parietes thinned and its cavities dilated, especially the left ventricle. The internal membrane, which covers them, presents a deep red colour, which extends to the origin of the aorta and its valves, is not removed by repeated washing. This is observed as far as the abdominal aorta. The pericardium contained several ounces of reddish serum.

We shall now proceed to give a rapid sketch of the symptoms presented by this disease. We shall barely notice such as have no immediate connexion with the subject, such as hemoptysis, purulent expectoration, rale with ebullition of air, pectoriloquy, nausea and relax. We were struck with the violence of the fever in a case of this kind, that is to say, a case of phthisis.

This fever had all the characters of that known under the name of inflammatory or angiotenic fever; burning heat of the skin, although moist; pulse frequent, developed, rather soft; the face was of a bright red, the head painful, and we observed a slight delirium; the thirst was inextinguishable, the patient complained of intense pain under the sternum, and in the epigastric region, in consequence of which twenty leeches were applied. The pain was moderated; but the fever and delirium, with trembling in the muscles of the limbs, injection of the face and eyes, remained: lastly, the pulse, though frequent, lost its force, the face had sunk, and the patient died on the fifteenth day.

The whole of the symptoms were certainly not such as are usually observed in pure and simple phthisis.

We have not the least doubt they should be referred to a phlegmasia of the internal membrane of the arteries which we have confirmed by autopsic examination. This fact is very important, and goes to support the opinion of those who have attributed the inflammatory fever to a phlogosis of the vascular system, and accords perfectly with that of the celebrated Austrian physician P. Frank, who assigns, as the symptoms of acute aortitis, a considerable throbbing of the arteries of the head, a painful sensation in the course of the aorta, and a state of agitation and continual anxiety.

Case XXV.

Hectic Fever; Pulmonary Tubercles—Death: Redness of the Internal Membrane of the Heart.

Toupaint Brule, twenty-seven years of age, grocer, of a delicate constitution, had taken cold more than eight months previous to his entry to the hospital Cochin, July 2nd, 1822; he left the Hotel-Dieu, where he had for five days, he said, a burning fever, with delirium and agitation; he had suffered repeatedly from hæmoptysis. However this may be, at his entry he presented symptoms of advanced phthisis pulmonalis, and particularly a pectoriloquy, very evident in the whole superior part of the thorax. The pulsations of the heart were dull and developed; the fever was very high, and we could scarcely count the pulse, which was very quick and rather developed; (pectoral mixture, broth, &c.) On the 3rd, the patient had an hæmoptysis, after a warm dispute with one of his parents. The 4th, the face was entirely decomposed, and death took place on the 5th, at six in the morning.

Inspection of the Body thirty hours after death.

Tubercles and pulmonary excavations, chronic false membranes, &c.—The texture of the heart is soft and flabby; the internal membrane of its cavities is of a deep red; the left ventricle is dilated.

The reflections at the end of the preceding case would apply, for the most part, to this; therefore they need not be repeated.

Case XXVI.

Almost Gangrenous Softening of the Heart, Redness of its Internal Membrane and that of the Aorta.—Tendency to Syncope, Irregularity of the Pulse, sudden Death.

Jean Louis Poismule, aged forty-two, stamp-worker, large, brown, and strongly constituted, presented symptoms of phthisis pulmonalis for nearly six months, when he entered the hospital Cochin, the 24th of June, 1822; then breath very short, oppression, difficulty of breathing, syncope on the least motion; pain in the chest, extreme weakness, œdema of the malleoli, wasting, night-sweats, skin dry, hot fever, pulse very frequent, rather developed, but soft and without resistance; pulsations of the heart soft, moderately sonorous. (pect. tinct. quart.) The following days were not marked by any extraordinary symptom, except extreme irregularity and intermittence of the pulse. On the 3rd of July, at midnight, the patient was rather unexpectedly found dead in his bed.

Autopsy thirty-five hours after death, (putrefaction of the body already well marked.) Marasmus was not yet much advanced; lungs adherent in every direction, filled with tubercles and large excavations. A considerable portion of their texture was soft and

almost putrid. The heart voluminous, soft, flabby, of a brownish colour, as if it had already begun to putrefy; had its cavities dilated: the internal membrane which lines them was red; that of the aorta offered a deep red poppy colour.—The pericardium contained a red serum; the vessels contained a brownish and almost decomposed blood; gas, the effect of commencing putrefaction, was found in almost every part, and the whole body was enormously swelled.

It is not probable that the patient, in this case, died of phthisis pulmonalis. We know very well that the peculiar property of this disease is to consume, to reduce to the last stage of marasmus its numerous victims; but our patient was very far from having yet arrived at extreme emaciation: he preserved, on the contrary, a good degree of flesh. Remark, lastly, that this man died suddenly, which is not unusually the case in phthisis. To what lesion, then, must we attribute this kind of anomaly, or rather, these incidents out of the common course of disease? We think this lesion is precisely the one we have met with in the heart and aorta; that is to say, phlegmasia of these organs: by it you can account for the tendency to lypothymia, the intermittence and irregularity of the pulse.

We shall not enlarge on this subject; because the reflections arising from it would be more appropriately placed in the chapter on inflammatory softening of the heart.

We could add some other cases to those we are about to relate; but we shall reserve them for other parts of this work, when we shall be careful to relate every thing which has any connexion with the subject under consideration.

Before making any observations on the cases relative to chronic inflammation of the aorta and internal membrane of the heart, we shall present some new reflections on those which precede.

We have regarded all the cases of redness we have related as being traces of inflammation. Some persons will not agree with us perhaps respecting the nature of this redness, and consider it entirely independent of the inflammatory state: we will acknowledge we have been ourselves, for some time, disposed to embrace the latter opinion, from the circumstance that this redness is not owing to vascular injection, nor is the membrane always thickened; but the following considerations almost compelled us to adopt the other opinion. It is not absolutely necessary, in admitting the existence of acute membranous inflammation, that the membrane be thickened and of a redness evidently produced by capillary injection. In fact the serous membranes do not increase in thickness, in the most violent phlegmasiæ, and very often the redness, which colours them, resembles a kind of painting, absolutely the same as that observed in the cases we have mentioned. In acute pleurisy and peritonitis, as we frequently have had occasion to observe in examination of the body, we have met with large patches or long stripes of bright red, as if the membrane had been stained with blood, and without the least vestige of vascular injection. On the other hand, this absence of apparent capillary injection in inflammation of the internal membrane of the arterial system, will surprise us, perhaps much less, if we reflect that in the natural and healthy state, we cannot perceive any vessels in the tissue of this membrane, the nature of which, at present, has not been satisfactorily

explained. Finally, some of the facts related in the two first cases, for example, the redness, certainly indicate an inflammatory nature; and analogy leads us to infer that such is also its nature in the following cases. Other reasons may be given which strengthen and confirm this analogy; in almost all these cases the redness in question coincides with more or less inflammation of the other organs, and in most of them foreign substances of an irritating nature, or different kinds of *ingesta* are introduced into the circulation, well calculated to produce inflammation of the internal vascular membrane, which receives the first impression of them. This is what most probably takes place in phthisis, particularly in those cases where the suppuration of the tubercles is going on; in such cases there is more or less active absorption of purulent matter.

An attentive examination of all these circumstances, the authority of many celebrated observers, has decided us to admit that the redness in question is a mark of inflammation; and we shall, therefore, no longer consider it as a phenomenon of *imbibition*, and *transudation*, or as an effect purely cadaveric. In every case we only propose our opinion as the most probable, and are always ready to adopt another which shall be more conformable to observation and reason; until then we shall retain the opinion we have already formed. M. Laennec relates in his work that M. Recamier considers redness of the aorta as of an inflammatory nature. This authority ought to have great weight with us. Mr. Hodgson says that redness is frequently observed surrounding a coagulum, and the same is observed in the arteries which have

been a long time exposed to the air in the dissecting rooms.

As to us, on the contrary, so far as regards the redness of the internal membrane of the heart, we have observed it to coincide more particularly with a state of remarkable fluidity of the blood; and it has appeared to us that the redness of the arteries diminishes by long continued exposure to the air, especially when it is moist.

II. OBSERVATIONS ON CHRONIC AORTITIS.

Case XXVII.

Chronic Phlegmasia of the Internal Membrane of the Aorta, and slight Dilatation of the Arch.

Pierre Guerle, aged fifty, shoe maker, of middle stature, and rather strong constitution, entered the hospital Cochin, on the 14th of June, complaining only that he had taken cold.

On the 20th of the same month he presented no remarkable phenomena: he had spit a little blood; his pulse rather slow than frequent, was rather hard, and a little vibrating; percussion gave a flat sound at the left.

On the 23d, he manifested great difficulty of respiration: expression of the face altered; the patient, in other respects extremely tranquil, did not manifest any solicitude respecting his fate. The two following days he appeared a little better. 26th, orthopnœa and impending suffocation: face, which for many days had begun to assume a blue tint, presented this colour more decidedly: pulse constantly slow, regular,

a little vibrating. Three following days respiration less embarrassed, although strength decreasing. 30th, patient expectorates vermilion coloured and frothy blood: in the evening he fell into a kind of torpor, which continued during the night, and the next day, till after midnight, when death occurred after slight mucous rattle.

Examination of the Body. The internal surface of the aorta throughout, and commencement of the caroted and primitive iliac arteries, were covered with white spots irregularly disseminated, the most of them situated beneath the internal membrane; some were cartilaginous others osseous, or rather, formed of lamina of phosphate of lime, some of which were found in contact with the blood.

The arteries indicated were unequal: the arch of the aorta was rather large, though not really dilated.

The heart, of large size, adhered throughout to the pericardium, by a thin cellular tissue, not very firm and slightly infiltrated with albuminous matter; the cavities, especially the auricles, contained a large quantity of blood; the walls of the left ventricle were very thick, and its capacity augmented; capacity of the right ventricle less than natural.

The lungs, and particularly the right, adhered to the costal pleura by rather dense cellular tissue, and were engorged with blood at their posterior and inferior portion. In the present case, we could explain the force and vibration of the pulse by the hypertrophy of the left ventricle, and deny that there was any relation with the phlogosis of the arterial texture; but it will not be so in the following case, where we shall find the pulse, much stronger, coinciding with thinness of the left ventricle.

Case XXVIII.

Thinness and Dilatation of the Walls of the Left Ventricle; Inflammation and Ossification of the Aorta, &c.

Anne Berger, forty-seven years of age, botcher—has been afflicted for nearly two years with spasms, and many other analogous symptoms which she refers to a nervous affection produced by her *turn of life*. She was under the care of a great many physicians and surgeons, who all pronounced her disease to be an affection of the nervous system, and, consequently, prescribed anodynes and antispasmodics without success. From the time she entered the hospital Cochin, 13th of May, 1793, this patient suffered a great deal from difficulty of respiration. She was every moment afraid of being suffocated, and was obliged to remain, almost constantly, in her chair; she felt, she said, something rise up in the throat which almost choked her. She suffered great heat of the head; her feet were somewhat swollen. All the arteries sensible to the touch, seemed more dilated than in the ordinary state; their pulsations were thick and accelerated: those of the carotid arteries were very sensible to the sight; the movements of the arch of the aorta produced a kind of elevation towards the slope of the first piece of the sternum. The ulnar arteries beat with violence; the patient said, also, that she felt pulsations in the interior of the body. Tormented with the fear of dying, she gave herself up to despair with the most incoherent expressions.

The movements of the heart were precipitate, but presented, in other respects, nothing extraordinary.

All the symptoms increased more and more, and the patient died the 27th of the same month, after having suffered severely both in mind and body.

Autopsy twenty-six hours after death.—The face was swollen; the whole body was marbled, and presented a great number of livid, somewhat extensive spots.

The left cavity of the thorax contained a small quantity of reddish coloured liquid. The heart was more voluminous than in the natural state; the right auricle was distended by a considerable quantity of blood; the ventricle of the same side, and the pulmonary artery offered nothing remarkable.

The left auricle was in a healthy state; but the corresponding auricle was of twice the natural size, and its parietes were evidently thinned. The great sinus of the aorta was very apparent; the walls of this artery were hard, and thickened in many points. The internal membrane was inflamed, from its origin at the left ventricle, to the common iliac arteries; the carotids were also, as well as the sigmoid valves. We remarked, besides, in the whole of this extent, small hard whitish tubercles.

The other arteries were in a state which appeared to us perfectly healthy. The abdominal organs presented nothing peculiar, unless it was that the mesentery was sensibly distended by gas, which, in some places, formed small vesicles: the arteries of this membranous fold contained them also, and in rather large quantities. This case offers us, in their full force, the principal symptoms of arterial inflammation. These symptoms, in fact, consist essentially in augmented action of the arterial system, in pulsations quick, strong, vehement, and, as it were, vibrating,

such as were observed in our patient. The pulsations were so violent towards the hollow of the sternum, that we had suspected the existence of an aneurism of the arch of the aorta. This violence in the arterial contractions and dilatations was so much the more remarkable here, that it coincided with a thinning and dilatation of the walls of the left ventricle, two circumstances unfavourable to the force and quickness of the pulse. We are then obliged to admit a peculiar contractile power of the arteries, and an action independent, to a certain extent, of that of the heart. The pulse, consequently, does not always indicate the state of the heart; but not only does the arterial system, in general, exercise functions of its own, which may be increased in energy, without any participation of the heart, but also the different branches of the arterial trunk are, in the same manner, independent of each other, and it is not unfrequent to find the pulsations of one artery much stronger and more forcible than those of another: the aorta, in particular, offers us frequent examples of this phenomenon.

Every one knows that individuals are not unfrequently met with, affected with forcible beating at the epigastrium, the only symptom of their complaint, which, in fact, is nothing more than the aortal pulse, rendered more powerful, undoubtedly, in consequence of more or less acute irritation of the arterial tube. M. Laennec calls this affection spasm of the aorta, of which, as we before observed, all the other arteries are equally susceptible, although the affection in them is not so frequently mentioned as that of the aorta.

Case XXIX.

Chronic Inflammation of the Aorta, with Yellow Spots on its Internal Membrane; Pleuro-Pneumonia; Adhesion of the Pericardium to the Heart.

A stone-cutter, named Albert, aged 24, fell, at the age of fifteen years, from a third story, on the right side of the chest. General and local bleeding removed the first complaints; but his health, which till then had been quite good, began to be deranged, and symptoms of catarrhal affections were not long in appearing, as well as vomiting and spitting of blood, at various intervals. After two years' military service, this affection having become more intense, he was dismissed. He could not inform us whether he, at that time, suffered palpitation.

In the month of January, 1814, the lower limbs were affected with an œdema, which was entirely dissipated in the month of June.

The 1st of January, 1815, the spitting of blood, which had become less frequent, again appeared, complicated with a stitch in the side. These symptoms yielded to repeated blood-letting. At this period, the patient was sent to the Cochin hospital, by Dr. Devilliers; while we observed the following symptoms: the face was pale; the beatings of the heart were very strong and violent, heavy pulsations were felt at the superior part of the sternum, and in the left clavicular region, directly below these two bones: the head was forcibly shook; the pulse was regular, but rather vibrating. The 3d of February, the beatings had become enormous, and raised the integuments with great force: passing the finger be-

tween the two sterno-mastoids at their inferior part, we felt the sensation of a large tumour with a kind of trembling and rushing very distinct. Putting down the ear, we heard a considerable noise under the sternum. The pulsations of the heart were so violent that we heard them distinctly, as we drew near the patient: they were isochronous with those of the tumour, which we thought we could perceive. The region of the heart did not give a very clear sound on percussion.

Sleep was slight and short; without, however, being interrupted by sudden fright or starting.

Such was the state of the patient to the 8th of February, when the students who attended the visit proposed to try the method of Valsalva. We consented, warning them, however, of the difficulty of putting it in practice, especially in an hospital. We prescribed two bleedings from the arm, at an interval of five days, and we restricted the patient to one portion of porridge a day, for his whole diet. Nevertheless, relax supervened eight days after, with accessions of fever in the evening. On the 18th, symptoms of adynamia appeared; the patient remained in a state of supination; the lips and tongue were covered with a black and dry coat; the eyes remained immoveable and wide open; the respiration was slow, with considerable elevation of the thorax, the pulse regular, without frequency, had lost the vibrating character, which struck our attention at the commencement; the beatings of the heart, always strong, were felt in a great extent of the thorax; the patient could no longer speak or understand: infiltration was gradually advancing. 9th, the respiration was slow and trembling,

the mouth was covered with froth, which the patient could not spit out.

The head was thrown backward, the eyes appeared vitreous and immoveable; the pulse, was no longer to be felt, and yet the beatings of the heart preserved their force and extent, until death, which took place the same day, at nine o'clock in the evening.

Autopsy.—The body was moderately, but generally infiltrated. Percussion gave a flat sound on the right side, and obscure on the left.

The costal and pulmonary pleura of the right side was covered, in the whole of its extent, with an albuminous false membrane; the corresponding lung was hepatised in its inferior portion; three quarters of its superior portion presented marks of inflammatory swelling much less distinct; the tissue being torn, a large quantity of serous and frothy fluid flowed out. The superior portion of the lung contained some softened tubercles, and even tubercular excavations: the left lung offered an adhesion of the costal pleura; but this adhesion was cellular, and appeared to have been a good while formed; while the false membrane of the right side appeared quite recent: we observed also, towards the summit of the left lung, suppurated tubercles.

The pericardium throughout adhered to the heart, and was so intimately connected at its anterior surface, that we could only separate the two portions of that membrane by the most careful dissection; whilst posteriorly, we could easily destroy the adhesion with the finger, without the assistance of the scalpel.

The heart, viewed in its situation, presented nothing extraordinary; the right auricle was much di-

lated, but without any sensible change of its texture. the walls, of the right ventricle were partially thinned without dilatation of its cavity. The left side offered nothing special. The sigmoid valves of the aorta were larger than natural; their texture was thin without presenting any cognizable lesion; they were more dense than in the ordinary state, and seemed to present the rudiments of degenerated cartilage. The orifice of the aorta was evidently enlarged; but the aorta offered no dilatation. The external and fibrous coats were perfectly sound, but the internal offered here and there, as far as the curve of the arch, numerous yellow spots, which, below the arch, formed a kind of longitudinal band, along the posterior part of the artery. It was particularly at the origin of the carotids, that these spots were more apparent, and offered considerable thickness. We could easily pull off the whole of the internal membrane: it seemed neither more fragile nor easier to tear, in the places spotted, than in those that were not. The other viscera were in the natural state.

Let us return for a moment to the anatomical lesions, which we have met with in our preceding patients. They consist principally of thickening of the arterial parietes, yellow, cartilaginous, osseous, and calcinous plates, with or without redness more or less developed. In general, the plates mentioned are situated below the internal membrane, in such a manner, that we cannot resist admitting, that inflammation determined a morbid secretion on the adherent surface or in the cellular tissue, which unites it to the middle coat, in the same manner as an inflammation of the arachnoid produces an analogous exudation between

it and the pia-mater, or in its reticulated texture. This yellow exudation of the aorta, is transformed by a series of changes into fibrous, fibro-cartilaginous, cartilaginous and calcareous lamina, in the same manner as the coagulable lymph of a pleuritic effusion is converted successively into cellular, fibrous, fibro-cartilaginous, and lastly osseous, deposition. These comparisons will no doubt convince those who entertain any doubt, of the inflammatory nature of these lesions of the aorta which we have been describing. We have not yet spoken of ulcerations of the aorta, a circumstance so favourable to the opinion which we have proposed. The cases XXXVII. and XXXVIII. from which we shall proceed to give an extract, will offer us some remarkable examples of this kind of lesion, generally regarded as an indubitable sign of phlegmasia.

A man, named Hivet, died of an aneurism of the aorta.—The walls of this artery were thickened; the cellular membrane was red and injected; the internal membrane was, if I may be allowed the expression, sprinkled with ulcerations, and, in many points, discoloured; we found underneath it a pultaceous grumous, atheromatous, yellow matter. This membrane was easily separated from the others, and was torn with the least force. The middle membrane itself was affected with several deep blackish-coloured ulcers. The internal membrane, generally, was rough and uneven, and strewed with cartilaginous or calcareous lamina; some of which, after having torn the membrane, were exposed to the current of the blood.

Another man, named Pinçon, aged 35, died of the same disease as the preceding. The walls of the

aorta were thickened; the internal membrane was of a deep red, and strewed with a great many ulcerations, and also with an infinite number of calcareous or cartilaginous laminæ analogous to those above described.

The ulcerations we have spoken of, are similar to the rudiments of aneurism, described by Scarpa, and an affection, more immediately fatal—we mean perforation of the walls of the aorta, without the formation of an aneurismal sac. We shall relate a recent example of this perforation observed by Dr. Ferris.

Case XXX.

Ossifications of the Aorta; Ulcerated Perforations of the Walls of this Artery, at its Origin, with Effusion of Blood in the Cavity of the Pericardium, followed by almost sudden Death.

A woman, named Lauret, had been a long time troubled with disappointments. For five months she complained of continual suffering, oppression, and looseness, when she was admitted to the Salpetriere. Residence in a hospital appeared to her dishonourable, and this idea redoubled the painful regret of her former condition: nevertheless, she could get up and walk, and had a tolerable appetite. Every evening she went alone to her chamber, in the fourth story; not, however, without a good deal of difficulty. She went to bed at half past four, slept little, complained much, and was obliged to go to stool, frequently, during the night,—a great inconvenience to her neighbours. They demanded that she should be conveyed to the Infirmary, but she refused.

On the 20th of October, 1823, she received a visit from a nephew, whom she had not seen for seven years: she was very much afflicted that her relation

should see her in an hospital. On the morrow, her emotion was so much increased upon receiving a visit from a cousin, whom she had not seen for twenty-two years, that she fell into a fainting-fit, from which she with difficulty recovered, and was carried to bed. M. Belhomme was called, and found her lying on her side, with her face pale, and bathed with sweat: she respired with difficulty, and the heart scarcely beat. (Sprinkled with vinegar, friction of the limbs.) She was promptly relieved. M. Belhomme, after having prescribed an anodyne draught, had her conveyed to the Infirmary: as she was carried thither, at half past four, the following circumstances occurred in the stairway—oppression, suffocation, mucous rattle; followed by sudden death. After having placed her in bed, the house physician just mentioned was again called, who found her without pulse, face discoloured, and extremities cold: in short, in the state of a person who was about to yield the last breath. *The examination of the body* was made by M. Ferris himself, physician of the hospital. The brain and cerebellum were not in the least altered. The lungs were healthy. The pericardium was uncommonly large, without any increased thickness of its walls; its greatest development was at the lower and left part, where it touched the costal pleura, by pressing upward the left lung, the base of which was found removed twenty-six inches from the diaphragm. An incision made at its anterior part gave vent to four or five pints of serum a little turbid. A clot, several inches thick, weighing about eighteen ounces and a half, formed a complete envelope to the heart. This organ, pale, discoloured, with a little fat around it, is

about the common size. The aorta, where it leaves the left ventricle, in the place where its walls are strengthened by the fold furnished by the pericardium, presents a round hole about an inch and three quarters in diameter, communicating with the cavity of the pericardium, and covered by the clot indicated above; all around, the arterial walls are thinned, and dotted with small red points, as far as the arch of the aorta; the neighbouring parts are infiltrated. Above the perforation the aorta is retracted, and in part ossified: other ossifications are found at the origin of the arteria innominata, the left subclavian, and the carotid of the same side. The liver, very large, fills the left hypochondrium; its thin edge is covered by the transverse colon, its surface covered with slender, varicose veins, of a deeper red than common: to its concave surface adheres strongly the spleen, also very large, and presenting the same alterations. The stomach, large and pale externally, offered on its internal surface, a rather deep rose colour, which follows the intervals of the veins, and does not disappear by scraping. The intestines are distended by gas: their external and internal surfaces are pale; no other peculiarity was remarked.*

Unquestionably, the strong moral emotion which agitated this woman, at the visit of her cousin, became the immediate cause of the rupture of the ulcerated aorta; and the effusion of blood into the pericardium, in consequence of it, was the cause of the syncope which occurred. Nevertheless, it is a very remarkable circumstance, that the patient did not

* Observations published by M. Ferris in the third volume of the Archives Générale de Medecine, for December, 1823, p. 568.

immediately sink under this terrible accident, but revived, and did not expire till an hour after, when she was carried to the infirmary; that is to say, when the movements and shocks, which were the inevitable effect of the conveyance, had detached the salutary clot, which had, without doubt, immediately covered the opening of the artery, and formed an obstacle, though a fragile one, to the flow of blood: a new proof of the necessity of perfect immobility in cases of hæmorrhage, where a similar cause has suspended the course of the blood; but, in this case, perhaps the most perfect repose would only have retarded for some hours an inevitable death.

This very interesting case presents us with a morbid lesion of which the records of medicine contain but few examples. It is seldom we have an opportunity of observing perforative ulcerations of the aorta opening into the pericardium; nevertheless, we find some facts of this kind among observers, and especially in the works of Walter, Morgagni,* Scarpa,† &c.

As an ulcer of the internal membrane of the aorta may be propagated to the middle and external membranes, and destroy them in their whole thickness, and thus transform them into a true perforation; so also an ulcer, which has commenced by the internal membrane of the heart, may destroy successively the muscular layers and serous membrane of that organ, to make its appearance in the cavity of the pericardium, and determine a perforation, followed by discharge of blood, quickly mortal.

* De Sedibus et Causis Morbor., epist. 26.

† Traité de l'Aneurisme.

Our third case is an example of commencing ulceration, if we may so speak, of the internal membrane of the heart. We have not had an opportunity of seeing them deeper. Many ancient observers, such as Benivenius, du Laurens, Lazare Reviere, appear to have observed ulcers of the internal surface of the heart, in cases of partial inflammation of that organ. Corvisart does not cite any example of his own; M. Laennec has recorded only one; the ulcer was situated on the internal surface of the left ventricle, an inch long and half an inch broad, and more than four lines deep in the centre; it occasioned a rupture of the ventricle, which appeared to have taken place two days before death.

Rupture of the heart is a terrible accident: fortunately, it is very rare, and is almost always the consequence of a perforating ulcer of the heart. Morand has collected some examples in the *Memoires de l'Academie des Sciences*, for the year 1732; the 64th letter of the treatise *De Sedibus et Causis Morborum*, contains one; the work of Corvisart affords another, which was also seen by M. Ferris.

Softening of the muscular substance of the heart is a circumstance favourable to the laceration of its walls. As to ruptures of the heart, without any previous change of substance, they are very uncommon; Haller, Morgagni and some others, nevertheless, cite a few cases, the immediate causes of which undoubtedly were external injury, uncommon exertion, and excessive anger.

We have seen a rupture of the right auricle, in a man who threw himself out of the window, during the pangs of most distressing dyspnœa. M. Grateloup,

physician of Bordeaux, has recently sent an example to the office of the *Archives Generales de Medecine.* This physician was called, the 15th of November, 1821, to a curate who had lost his reason. The patient was already dead, when M. Grateloup arrived; the body was that of a man of plethoric and strong constitution. The whole exterior of the body was cold; there was a considerable effusion of red serum mixed with large clots of blood in the pericardium; the heart was large, and prodigiously fat; the right auricle was torn, about an inch in length.

The subject of this observation, having supped as usual, was taken, at the moment of lying down, with considerable shivering of the hands and feet. He had hardly got into bed, when he was taken with nausea and vomiting; called his servant, and fell speechless and insensible into his arms; became pale and cold, and immediately expired. Observation seems to have confirmed the opinion that a large quantity of fat about the heart, is a circumstance favourable to its rupture. It is probable, in the present case, that the strong reflux of blood into the auricle during the efforts of vomiting, was the immediate cause of the accident.

M. Rullier presented to the Royal Academy of Medicine, at the sitting of the 6th of April, 1824, a heart, which offered on the internal surface of its cavities, many irregular tumours, which appeared to consist of fibrinous concretions which had been formed a long time before death; besides this, the parietes were perforated in two places. At the next sitting, M. Andral, jr. related a case of rupture of the heart, with perforation of the stomach. Death took place,

suddenly, in consequence of strong moral emotions. The posterior wall of the left ventricle presented five oblong perforations situated in the direction of the longitudinal axis: the remains of the fleshy fibres, irregularly torn, floated around the perforations. The structure of the heart was not in the least softened.

Corvisart was the first who collected cases of another species of rupture of the heart, which he designates by the name of *partial rupture;* by which is meant the rupture of the fleshy columns, and tendons of the valves. In the three cases recorded in his work, the rupture appears to have been owing to violent exertions. A similar fact has been observed by M. Laennec, and related in his *Treatise on Mediate Auscultation:* the accident consisted in a rent of the tendons of the valves, which seemed to have taken place in consequence of ulceration of the ligamentary cords. The symptoms which denoted this kind of rupture in the patients observed by Corvisart, were a sudden and almost complete suffocation, and, consequently, all the general phenomena of diseases of the heart.

To the cases of Corvisart and M. Laennec, we shall adduce the following one of our own, in which a rupture of the fleshy pillar of the right ventricle was probably effected by a violent paroxysm of cough. This accident, in other respects, was not announced by any peculiar symptom, which would lead us to recognise or even suspect it.

Case XXXI.

Rupture of one of the Muscular Columns of the right Ventricle, in a Case of Phthysis.

A young woman, named Sophia, aged 22, had arrived at the third stage of pulmonary consumption, when she entered the hospital Cochin, on the 30th of July, 1822. She had severe spells of coughing, and high fever, with a pulse so precipitous that we could with difficulty count the pulsations. She died in eighteen hours after she entered the hospital. *Autopsy*, twenty-seven hours after death. The two lungs were entirely disorganized, and converted into a tubercular substance. The pericardium contained a portion of serum. The heart was rather firm, a little smaller than the fist of the subject, and rather bare of fat; the right ventricle filled with a kind of purulent, white, liquid matter, contained a small whitish clot: this kind of globular vegetation adhered to the tendons of one of the fleshy columns, which was *broken*, and was floating in the middle of the ventricular cavity.

It seems to us that the perforations and ruptures of the heart and aorta present, in respect to the mode of their production, the greatest analogy with the ruptures and perforations, denominated spontaneous, of the stomach, the œsophagus, intestines, bladder, and uterus; and we might show the entire conformity of these pathological conditions, were it not that such a discussion, out of place here, would draw us too far from our principal object.

We might also add a great number of other cases to those we have already given, relative to chronic

phlegmasia of the internal membrane of the aorta; but we think we ought to confine ourselves to the preceding, more especially as we shall see others when treating of the dilatations and aneurism of the same artery in many other parts of this work: because the diseases of this artery are so common that they are met with in almost all those which affect the heart.

When cartilaginous, calcarious, or osseous indurations affect the valves of the aorta, heart, or pulmonary artery, a contraction of the corresponding orifices takes place, the effects of which are of so much importance, and the symptoms so well marked, that we thought it our duty to devote a particular chapter to this subject, as well as dilatation and aneurism of the aorta: it is for this reason that we shall consider these important effects of phlegmasia of the internal membrane of the heart and large vessels separately from the general history of this disease.

ARTICLE II.

General History of Inflammation of the Aorta and Internal Membrane of the Heart.

1st,—Signs, Symptoms, and Characters of this disease.

The signs of this inflammation are anatomical or physiological, that is to say, they are drawn from the anatomical alterations of the parts inflamed, and from the alteration or modification which these parts suffer in their proper functions. The anatomical signs can only be ascertained after death, while the physiological, as it is superfluous to say, can only exist during life.

SECTION I.—ANATOMICAL SIGNS.

The signs or anatomical characters of the disease which occupies us consist of a redness of the parts affected, an effusion of pus and lymph, thickening, ulceration and gangrene of the textures; cartilaginous, calcarious or ossiform incrustations, formed either at the surface, or in the substance of the inflamed membrane; and lastly, a loss of cohesion and a species of fragility, which are observed in the same parts.

A. The red colour of the internal membrane of the aorta and heart offers a great variety of tints. Sometimes it is a scarlet red, sometimes poppy red, at other times violet, and then again it is of so deep a red, that it seems almost black; and lastly, it sometimes passes, by a kind of gradation, to a yellow tint. In general, the redness is much deeper in the right cavities, than in the left, and it is seldom that the scarlet tint is observed excepting in the aorta. The redness is also ordinarily more distinct on the valves than elsewhere, and appears to affect exclusively the internal membrane, because if this be detached we find the fibrous membrane of the same colour as in the natural state.

We have never been able to observe any traces of vascular injection to account for this redness, yet M. Hodgson assures us that in the cases of acute inflammation which he had examined, the middle membrane always offered a degree of unnatural vascularity. We cannot compare this uniform redness to any thing better than a kind of *stain*. It is general or circumscribed. We have seen it extend into the aorta in long bands, separated from each other by intervals, in

which the membrane was entirely white. It may occupy at the same time the aorta and its divisions, the heart, pulmonary artery and its ramifications, the vena cava and pulmonary vein; or it may have its seat in one, or several of these parts. We have submitted to maceration in water some of the vessels thus coloured, and the redness completely disappeared. This redness does not appear to be accompanied with thickening of the membrane. We have considered it as the result of an inflammation, whatever be its shade of colour. M. Laennec thinks the scarlet colour may indicate inflammation; but he compares the violet colour to that which is observed on the cheeks, on the mucous membranes of individuals affected with obstructed circulation, and even to a certain extent to the livid state of the dead body. If there is any degree of redness, which may in fact be regarded as not inflammatory, it is unquestionably that of which we are speaking. New facts are necessary to enable us to pronounce in a positive manner on its true character. Constantly, as we have already said, the redness is deeper in the right cavities and pulmonary artery, than in the left cavities of the aorta. This difference of tone, it appears to us, may be explained, at least in part, by that which exists in the colour and nature of the blood, which flows in one or the other of its cavities: we know in effect that the blood, which passes through the first, the *right* blood, if we may so speak, is browner and of a deeper colour than the *left* blood. Finally, this violet brown, and even black tint, is not a decisive reason why we should reject the idea of an inflammation; because many phlegmasiæ of the skin and the mucous membranes, and among

others those which manifest a gangrenous tendency, are accompanied with a livid, violet, brown or blackish redness.

B. Inflammation of the internal membrane of the heart, and aorta, as of every inflammation in general, sometimes gives origin to the effusion of an organized, concrete, or coagulable matter. Some of our cases, and especially the two first, are remarkable examples of it. If we do not find more frequently similar plastic effusions on the surface of the inflamed membrane, it is because the matter secreted is carried on in a state of solution into the current of the blood, with which it was found in contact; so that if the arterial walls were not thus separated from each other, by the column of blood, but put in immediate contact with each other, the concrete exudation of which we are speaking, would be followed by mutual adhesion. It is, in fact, what every body, at the present day, knows will happen if we apply a ligature to an artery. Therefore, if the adhesive inflammation has rarely, if ever, taken place in the aorta, it is necessary to search for the reason of it in the circumstances and conditions under which the arterial walls are found. Lastly, it is not rare to meet with arteries of a smaller size, obliterated in consequence of an adhesive inflammation of their internal membrane. It is indeed this disposition to adhesion, which prevents hemorrhage in the great disorganizations of many of the organs traversed by the large vessels; especially in the tubercular degenerations of the lungs. We have frequently met, around the walls of tubercular excavations, and in the bands or columns which traverse them, arterial branches obliterated in the

mode we have described. We shall see, farther on, that the organized lymph, secreted by the internal membrane of the aorta and heart, appears to be the medium by which granulations and valvular vegetations are produced. Farthermore, it is not the internal surface of this membrane only which appears proper to secrete the materials, and if we may be allowed the expression, the rudiments of an accidental tissue or a new production. Its external surface appears to be the seat of a similar exhalation; and it is thus that we may explain the formation of cartilaginous or osseous plates, so frequently met with underneath this membrane; at least we should not prefer to admit, that these accidental productions originate in the midst of the matter secreted by the fibrinous tunic and cellular tissue which unites it to the internal coat while in a state of inflammation.

C. However it may be, the yellow points, cartilaginous laminæ, calcarious and limy incrustations of the aorta seem to us to be nothing more than a series of changes, through which passes, successively, the matter secreted by the effect of inflammation. The extent, form, and thickness of these accidental productions are infinitely varied. Sometimes they form only small yellow or whitish points, which render the internal surface of the artery unequal and rough; at other times we find this same surface, in a manner, plated with fibrous lamina, and fibro-cartilaginous layers much more extensive, and which are afterwards converted into osseous or calcarious incrustations. These often have the most perfect resemblance to egg-shells, and only differ from them, in some cases, by a greater or less degree of thickness. These cal-

carious plates are most frequently situated underneath the internal membrane, but they are sometimes situated in the texture of this membrane, or in that of the middle membrane; and it is not uncommon to meet with a considerable portion of an artery, the entire walls of which have been changed into phosphate of lime, forming an inflexible and inorganic tube. We shall see, in some of the following cases, changes of this kind. It happens, also, that the calcarious scales raise the internal membrane, tear it in some manner, and appear bare in the interior of the artery. Perhaps portions of these incrustations are finally detached, and form those kind of *stones*, which the ancient authors are said to have met with in the heart and in the aorta. We have generally remarked that a considerable injection of the cellular membrane, of the arteries, and of the aorta in particular, accompany the incrustations of which we are speaking. This degeneration occupies, sometimes, only a portion of the aorta. Frequently, however, it pervades its whole extent, and the facts which we have related, as well as others which we shall cite farther on, demonstrate that it is not unusual to meet with it in almost the whole extent of the arterial system. It is very common especially in the arteries of the base of the cranium and in their ramifications, and assuredly promotes the formation of many cerebral hemorrhages. We observe it more frequently in the arteries of the lower than those of the upper extremity.

We knew a case, in which the aorta formed masses so thick around the whole of a portion of that artery, that it was almost entirely obliterated. Analogous degenerations, not unfrequently, contract the orifice

of the arteries which originate immediately from the aorta. The name of *ossifications*, given to the calcarious incrustations we are about to describe, is not altogether proper. The mode of their formation is not in the least like that of nominal ossification, or osteogeny. We do not distinguish in them a fibrous structure, and they are produced by a kind of *crystallization* of phosphate of lime contained in the secreted matter, in the midst of which it is developed. Some authors have compared the membrane which secretes this matter to the periosteum, and this comparison is not, perhaps, so inexact as we might suppose; others have regarded these calcarious concretions not as morbid affections, but as a consequence of the progress of age, and they support their opinion on the circumstance that they are very frequently found in old men. But, notwithstanding this alteration is met with very often in the arteries of young subjects, and even in those of children, (although this is very rare,) it will always remain a problem, in what manner these calcarious plates are produced under the influence of the progress of age. Analogy, reason, and positive experiments on living animals, concur to prove that they are one of the terminations of inflammation. This truth has been clearly and ingeniously developed in a memoir which Dr. Rayer has published in the first volume of the *Archives Generales de Medecine.*

According to the chemical analysis, instituted by M. Brande, a hundred parts of these concretions contained 65,5 of phosphate of lime, and 34,5 of animal matter.

These concretions are sometimes developed very

rapidly and in an acute manner; but in ordinary cases they proceed slowly, and are, in fact, the product of chronic inflammation.

Instead of white or yellow spots, more or less projecting on the interior of the aortal tube, and the incrustations of which we have spoken, we sometimes meet with pustular and almost tubercular masses: and it is frequently by this kind of alteration that the ulcerations commence, of which we shall speak hereafter.

D. The principal anatomical characters of the accidental productions, which we have investigated, are almost constantly accompanied by a thickening and general hardening of all the arterial membranes. If we cut into the thickened, *hypertrophied* parietes, they grate under the instrument and oppose a considerable resistance to it, at the same time that the arterial texture is found deprived of its elasticity, and has become *friable, fragile,* and *brittle:* a new anatomical proof of the existence of an inflammation. Thickening of the walls, rarely takes place at the expense of the caliber of the aorta, but is almost always united with a considerable degree of dilatation. It is, without doubt, in consequence of the loss of elasticity, which the aorta has undergone, that in most of the cases we have spoken of, we have found it filled with more or less blood. We shall see, however, that the deposition of the salts of lime, sometimes form masses so considerable as to fill the arterial cavity and almost completely obstruct it.

E. We frequently meet with the walls of the aorta ulcerated. These ulcerations vary much in depth and extent. They are sometimes very small and

superficial, and implicate only the internal membrane; at other times they are considerably larger, with thick unequal edges, and so deep that the membrane itself in the part affected is entirely destroyed: in this case the bottom of the ulcer is formed by the cellular membrane only, as in the case of intestinal ulceration; and as the latter are sometimes converted into complete perforations, so the first may undergo a similar termination: case 30th, is an example of it. The perforation is completed in consequence of a violent impulse of the circulation, by rupture, and not by ulceration of the cellular or serous membrane; and, observe that the perforation of the aorta, with copious and sudden effusion of blood, happens precisely at the place where this vessel is found covered by the reflected pericardium, or in some other point, where the surrounding cellular tissue, much contracted, cannot assist the formation of an aneurismal sac: hence, the effusion of blood into the pericardium, bronchia, &c.

The ulcerations of the aorta sometimes have a dirty, sanious or even black appearance. We have found sometimes a little blood infiltrated in their circumference; at other times we have met with the internal membrane thickened, laid bare to a great extent, and, under its almost floating fragments, masses of a soft, pultaceous matter, analogous to that which forms the meliceris and atheroma: it is for this reason that Scarpa has given to this substance the name of an atheromatous alteration. We shall soon see the influence of ulcers of the aorta in the formation of the false aneurisms of authors. We have already said,

that we have never observed deep and broad ulcerations in the internal cavities of the heart. We have only met with superficial and very narrow ulcers on the valvular and auricular membrane. We have reported some cases of rupture of the parietes of the heart, collected by other authors. We shall not speak of gangrene of the aorta, because we have never had occasion to observe it.*

The different alterations we are to describe may exist separately, or combined in various ways with each other. We can scarcely conceive, on first inquiry, how it is, that lesions so varied can be the effect of one and the same disease. Nevertheless, on reflecting more attentively, we shall see that it is so. For this purpose, it will be necessary to consider inflammation in a more extended point of view than is commonly done; it is necessary to observe this phenomenon in all its periods, and all its terminations; to study its modifications according to the tissue affected and its acute or chronic progress. The first signs of phlegmasia relative to anatomy, are redness, a certain degree of tumefaction, and vascular injection. These are the only signs we can observe, if the disease terminates by resolution. If suppuration supervenes, then very different phenomena appear, according as the purulent matter is thrown out or retained in the system. In the first case the inflammatory irritation abates after a certain time, the suppuration diminishes, or ceases entirely; and if an ulcer exist, its edges approximate, and a cicatrix soon forms on its surface. In the second case, on the contrary, a part

* We shall speak elsewhere of that of the heart.

of the pus* which has been secreted enters into the vascular system, and a part becomes organized, by passing through a series of changes which it is of the highest importance to understand, which are not, properly speaking, phlegmasia, but results and accidents, and consequently characteristic of inflammation. It is by this series of modifications that pleuritic pus, for example, becomes successively a kind of false membrane or *amorphous* mass, in which rudiments of vessels soon appear; an organized cellular tissue, a fibrous, dense, fibro-cartilaginous, cartilaginous, or even osseous texture. Now, if this happens in pleuritic suppuration, why should it not occur in arterial suppuration? And if the productions, of which we have given a rapid sketch of the appearances, are generally regarded as marks of chronic pleurisy, why should we not agree to consider the cartilaginous, fibrous and ossiform tissues of the aorta which we have described above as traces of inflammation? To consider them in this point of view, is to conform to sound observation and the strict laws of analogy? But, we delight to repeat it, these accidental tissues, or new productions do not constitute the essential properties of phlegmasia; they are only the circumstances, terminations and accidents, if we may so speak, which belong to it: they resemble, in this respect, the indurations and cicatrices which we observe in certain organs, which have been affected with phlogosis, as, for example, the brain. These cicatrices and indurations of the cerebral substance are not an actual inflammation; but they indicate, that the point which they occupied had been formerly inflamed.

* See Note C. in the Appendix.

It should always be remembered, then, that the matter of suppuration, is the first condition of every formation of accidental tissue; that this matter, we say, varies in appearance and nature, according to the organs inflamed; wherefore it is not extraordinary, that the results of inflammation vary according to the tissue which it affects, and even according to some other circumstances. Thus, for example, the cellular tissue and the parenchymatous organs secrete pus, properly speaking; thus the serous membranes secrete a coagulable matter, ready to be transformed into cellular or serous lamina; thus the periosteum furnishes another matter which concretes, hardens and ossifies; thus the arterial tissue, composed essentially of fibrous membrane, exhales a liquid which becomes hard, condensed, and is converted into cartilaginous lamina or calcareous scales.

SECTION II.—PHYSIOLOGICAL SIGNS.

It is not so easy to exhibit the physiological, as the anatomical signs of aortitis. Among the causes which perplex our diagnosis, we must consider the situation of the organ diseased, which conceals it, in a great measure, from the observation of the senses, and the various complications with which aortitis is accompanied. If we analyze strictly the cases already given, and if we consider more attentively the most simple, as the 27th, 28th, and 29th, we shall see that pulsations much stronger than in the natural state, are the only manifest symptoms which have denoted the disease, a pain, and sensation of heat in the region of the aorta, anxiety, and fainting, are symptoms less constant, but which it is nevertheless important to

notice. We have presented two cases in which the pulsations of the aorta were so violent that we suspected an aneurism of this artery; the autopsical examination proved that there did not exist an aneurism, but only phlegmasia of the aorta. The position of the thoracic aorta is such that we cannot appreciate the intensity of its pulse, excepting towards the depression at the top of the sternum: on the contrary, by applying the hand, or, what is better, the stethoscope, on the abdomen, we feel the pulsations of the ventral aorta, and it is by this kind of exploration, that we may come to a knowledge of the disease which occupies us. We shall examine, in the article on true aneurism of the aorta, how auscultation may lead us to distinguish simple irritation of the aorta from its aneurismal dilatation.

The violent pulsation of the aorta, which we regard as the principal sign of aortitis, is often accompanied by a similar pulsation in all the large branches of the arterial system. The reason of this phenomenon is very simple: it is because the phlegmasia of the aorta coincides so frequently with that of the other arteries. We have already said, and we repeat it here, that the aorta alone may present an augmented energy of pulsation; and what we may observe in the aorta, may be observed, and is in fact observed in every other arterial trunk of considerable size, because inflammation of the arteries may be general or local.

If it be very true that aortitis is characterized by pulsations quicker and more vehement than in a state of health, this symptom, far from surprising, ought, on the contrary, to make us perceive that physiology

and observation would have sufficed to make us foresee it. Experiments on living animals have proved that the arteries are endowed with vital contractility, with a peculiar irritability, which different agents excite in a very sensible manner: now, inflammation of an artery is nothing more than an exaggeration of these properties, and from this exaltation ought, necessarily, to result pulsations more vigorous than in the natural state. On the other hand, observation of the phenomena of a local phlegmasia, a panaris, for example, teaches us that in this case, arteries, in which no pulsation could previously be felt, have offered them very distinctly, a circumstance which can be explained, only by the irritation, with which they have been affected: now, the phenomena which occur in these smaller arteries, we should expect to find in the large arteries on a corresponding scale.

It is, farthermore, evident that the symptoms above enumerated, can only be developed while the arterial texture has not yet undergone any deep disorganization and the phlegmasia is more or less acute in its course, but when the inflammation has continued a long time and has converted the parietes of the arteries into a cartilaginous or osseous substance, it should be classed among the latent phlegmasia, the diagnosis of which is invested with the greatest difficulties. Then it is no longer an extraordinary activity of the artery diseased which is observed: the walls, thus altered, become more or less unfit to carry on their functions, the circulation of the aorta languishes; and thence follows, according to many authors, one of the most frequent causes of dilatation and hypertrophy of the heart.

We have, as yet, considered aortitis only in its most simple state: when it is complicated with the phlegmasia of the principal viscera, with the fevers called *idiopathic*, *acute*, or *chronic*, its combined symptoms, confounded with those of the diseases superadded, become very difficult to distinguish; nevertheless, we may observe that a more or less considerable irritation of the aorta exists almost always where very high fever is present. But then it is not only the aorta, it is the whole vascular system, and the heart, itself, which participated in the irritation: it is also in cases of the kind we have stated, a well marked redness of the membrane of the heart, aorta and pulmonary, and large veins may be observed.

As to the inflammation of the membrane of the heart alone, it is uncommonly rare; analogy indicates that it should be characterized by an augmented force and frequency of the pulsations of the heart and pulse, when it is not so violent as to diminish, suspend, or arrest entirely the action of this organ. Observation confirms what analogy would lead us to foresee. In fevers, properly speaking, which seem to us to be constantly accompanied with an irritation of the heart, the frequency and force of the pulse are the two principal phenomena to be observed; so that if the fever assumes a grave character, and determines an intense inflammation of the heart, so that the muscular substance of this organ be affected, the pulse loses its force and regularity by increasing in frequency; and sudden death often terminates this formidable complication.

But we shall return to this subject when speaking of inflammation of the substance of the heart.

Violent pulsations of the aorta do not always announce a phlegmasia of its membranes, nor an aneurismal dilatation; circumstances purely physical may produce such pulsations. If we should find, for example, upon the aorta any body, which could transmit its pulsations with greater force than the parts which naturally surround it, we should observe the same phenomena as if the pulsations of this vessel had become more energetic in consequence of a phlegmasia. This truth, which auscultation has incontestably proved, was pointed out by Mr. Th. Young in 1815;* but he has drawn from it, at least in our opinion, conclusions, some of which are not very accurate. This author pretends that the anormal pulsations, which we might easily mistake for an aneurism, or for an effect of the independent action of an artery, is explained by the existence of a liquid effused into a cavity, which effusion propagates and communicates most easily the pulsatory movements. It is on this account that, in ascites, on compressing the umbilicus moderately, we feel the pulsations of the aorta. It is for the same reason that, in cases of hydrothorax, the pulsations of the heart are felt in a great extent of the chest. These remarkable assertions of Mr. Young are very just: we were not acquainted with them, till after long continued practice of auscultation we were led to make the same observations. It is certain that the accumulation of a fluid in the pleura or the peritoneum, produces the effect indicated by Mr. Young, that is to say, that it conveys with greater force the pulsations of the heart, and

* Medical Transactions of the College of Phys. of London, vol. v. 1815, No. 15.

aorta, and especially the noise which accompanies these pulsations. Many phenomena, furnished by auscultation, are explained admirably, by means of this remark; such as resonance of the voice and pulsations of the heart, in the points of the chest where there exists an accumulation of serum, such are the beatings which we hear in auscultating the abdomen of women in a state of pregnancy, &c.

In other cases it is not a liquid, but an abdominal tumour, more or less voluminous, which transmits the pulsations of the aorta with such an intensity, as to imitate those of aneurism: hence the ingenious expression of *false aneurism*, by which M. Laennec has distinguished this disease, or rather this phenomenon. There are few physicians, who have not had occasion to observe these anomalous pulsations of the aorta, which some have called *spontaneous pulsations*, others, with Morgagni, *spasms of the aorta*. M. Lannec admits, in explanation of them, that the tumour which we feel in front of the ventral aorta is formed by gas confined in some manner in one of the partitions of the transverse colon.* He is of opinion, also, that an accumulation of hardened fœcal matter produces the same effect. Combe reports the case of a patient, who had a violent and importunate pulsation in the umbilical region, and who after very acute pain in the abdomen, passed some hardened fœcal matter: he died, and at the opening of his body there was found an extraordinary contraction of a considerable portion of the colon and ilium, and the aorta perfectly healthy.

* Auscult. Med. tom. ii. p. 444.

The pulsations respecting which we have said a few words, are much less frequent than those which depend upon a more or less considerable irritation of the aorta. These have been confounded with the others by a great many authors: nevertheless it is very important to be able to distinguish them; for their nature being entirely different, the treatment must be different also.

When the ulcerations of the aorta, instead of giving origin to the formation of an aneurismal sac, terminate by a true perforation, a mortal hemorrhage is the result, of which case XXX has furnished us with an example: it is the same also with the perforations of the heart.

2d. The predisposing as well as the exciting *causes* of inflammation of the internal membrane of the aorta, and the vascular system in general, are rather numerous. From our own observations, and those of other authors, it is incontestable, that external injuries, such as falls, contusions, &c., violent exercise, and all the causes capable of quickly exciting the course of the blood, ought to be classed in the number of agents proper to produce an inflammation of the aorta. We might say the same of ingesta, too stimulating, or which possess properties more or less deleterious: this is the reason why we often find this disease in individuals, who indulge in spirituous liquors,* who indulge too freely in high living; in those who are affected with severe fevers, or any other disease, in which

* M. Toussaint Leroy has communicated to us the case of a man, who died after having drank a bottle of brandy, in whom was found an inflammatory redness of the whole vascular system.

the altered blood possesses properties more or less irritating. The cases, which we have reported prove the correctness of our assertions. Perhaps, also, the various poisons, the gouty diathesis, have an unfavourable influence in producing this disease.

There is one cause in particular which seems to exercise great influence in the production of aortitis as well as arteritis in general: we refer to hypertrophy of the left ventricle. If this cause be the true one, as Morgagni thinks, we can only explain it, by admitting that the arteries are irritated by the violence with which the column of blood propelled by the heart rushes against their walls. Morgagni reports a case from Boerhaave which seems to favour this opinion: this case is drawn from *comparative* pathological anatomy; it consists in this, that according to Boerhaave we do not observe ossifications at the origin of the aorta in stags which are brought up tranquilly in the parks of the great, whilst we meet with them in stags which have been a long time and very frequently run in a chase. However it may be, Morgagni makes use of the following curious remark to support the reasons which make him believe that the force with which the heart propels the blood into the aorta, may suffice to produce the various changes which we have previously described.

3d. The *Prognosis* of pure and simple aortitis is not unfavourable, except from the consecutive accidents which may supervene, such as perforation of the walls of the aorta, or aneurism. When it is complicated with violent phlegmasia of the principal viscera, with fevers called essential or idiopathic, it is on the symptoms of these last diseases that the prog-

nosis should be founded; hence, the reason why we think we ought to confine ourselves to these rapid remarks on this point of the history of aortitis, and we now proceed to the treatment.

4th. The *Treatment* of aortitis reposes on the same general principles as that of the other phlegmasiæ. Free, general and local bleeding, diet and diluent cooling and dimulcent drinks are the principal means to be adopted; if there is, indeed, an inflammation in which the utility of blood-letting is incontestable, and if I may be allowed the expression, palpable, it is indubitably that which is the object of our present researches. Absolute repose is also indispensably necessary, since movement, exercise, and especially exertions, are evident causes of irritation of the aorta.

The employment of means to calm the activity of the sanguiferous system, ought not to be neglected. Of all these, without doubt the most commendable is the digitalis purpura, under some one or the other of its forms; taking care always to increase the dose gradually.

Finally, if the aortitis should appear to be owing to any specific cause, it is evident it would be necessary to recur to the substances, which experience has confirmed to be effectual in similar cases; we shall only observe that, on the supposition it might be attributed to a venereal taint, the administration of mercury would regain great prudence, if it be true, as some physicians assert, that this medicine itself, sometimes occasions phlegmasia of the vascular system.

It is necessary to add, that the complications with which aortitis may be associated are a fruitful source

of new indications, which the practitioner ought never to lose sight of. Aortitis being rarely idiopathic, but more frequently sympathetic, it is necessary to adapt the treatment to the principal disease.

We shall finish this chapter with two cases of phlegmasia of the aorta which were cured.

Case XXXII.

Aortitis cured.—Margaret Pachot, married woman, aged 28, vinedresser, of middling stature and sanguine lymphatic temperament, had ceased to be regular for eight months previous to her making any complaint, when she entered the hospital Cochin, the 29th July, 1822. Was taken sick with catarrhal disorder, for which she took four or five emetics. She has been languid ever since, and presented, on arrival the following condition: pain in the middle and right side of the chest; oppression, cough with moderate expectoration; entire inability of lying on the left side; lancinating pains in the epigastric region and the abdomen; slight œdema about the malleoli in the evening, complexion yellow; tongue white, rather dry; thirst, nausea, constipation, pulse quick, vibrating, hard and frequent; febrile paroxysm at night, with sweats, especially at the epigastrium; drowsiness, startings from sleep, feeling of weakness. We hear a kind of purring rattle in a large proportion of the chest: the beatings of the right ventricle are much more clear and sonorous than those of the left ventricle, which are dull and concentrated. If we apply the cylinder to the umbilical region, we hear the

pulsations of the aorta, which are simple, rather sonorous, of a moderate impulsion, giving the sensation of the ordinary caliber of the artery. It is sufficient to apply the hand to the abdomen to feel its pulsations, which the patient had not perceived till within six weeks: they increased in intensity by paroxysms; when the patient is threatened with fainting, and the pulsations, she says, strike her to the heart: while she was sitting up, she suffered from vertigo, and cephalalgia, like the blows of a hammer upon the head. (Expectorant electuary, laxative lavement, quarter diet.)

The 1st of August, twenty leeches were applied to the side. The following days, the pulsations were no longer sensible to the hand; nevertheless the patient complained from time to time of cephalalgia, and acute pain, with a kind of convulsive beating of the heart: her face was pale, and less discoloured. Twenty leeches were applied to the anus, on the 16th of August. On the 17th and 18th, she was much relieved and disposed to leave the hospital; at intervals she was troubled by chills and cold sweats. On the 21st, she no longer felt the pulsations in the abdomen; which, in fact, had completely disappeared; she no longer complained of faintness, and suffered only slight inconvenience of the head; she requested and obtained her discharge.

An old soldier, far advanced in years, of an irascible, violent character, entered the Hotel Dieu during the year 1823, for intense beating in the abdomen. On applying the cylinder to the middle of this region, it was raised, and as it were thrown up by the simple pulsations, which were of such violence, that

they were heard in the whole extent of the abdominal aorta, the caliber of which did not seem to be augmented; no bellows sound, either in this, or the preceding case, was heard; the pulse was hard and vibrating. M. Recamier, whose ward the patient occupied, had forty leeches applied in the direction of the aorta. After some days the pulsations ceased, and the patient left the hospital perfectly cured.

CHAPTER II.

ON DILATATION AND ANEURISM OF THE AORTA.

PRELIMINARY CONSIDERATIONS.

The first notions entertained respecting aneurism of the aorta, can scarcely be traced back so far as the period when the great anatomist Vesalius flourished. In the course of the sixteenth century, the doctrine of the dilatations of the aorta made but slow progress, as the illustrious Morgagni has before observed. In the following age, Riolan advanced that aneurism of the aorta, meaning thickness of its coats, rarely occurred; and Elsner regarded the case of an aneurism of the great artery, observed by William Riva, as a wonderful circumstance; but towards the end of the seventeenth century, and during the course of the eighteenth, pathological anatomy having been cultivated with redoubled zeal, so many new facts were added to those with which science had already been enriched, that dilatation of the aorta no longer appeared wonderful, or even rare. Notwithstanding the labours of Lanusi, Valsalva, Morgagni and many other commendable physicians, much has always remained to be done for the history of aneurism of the

aorta. The diagnosis of this disease has always been enveloped in profound obscurity, and its relation with chronic phlegmasia of the parietes of the aorta, had not been sufficiently distinguished. Scarpa, Corvisart, Laennec, Kreisig, Hodgson, have, without doubt, thrown a precious light on this interesting subject; and perhaps our own researches may not have been entirely destitute of value. We shall endeavour to develop more just ideas on the mode of formation of dilatations and aneurism of the aorta, and dissipate, as much as possible, the clouds which obscure the diagnosis of this disease. We shall begin by stating facts, and then proceed to give a general history of aneurism of the aorta.

ARTICLE I.

Observations Relative to Dilatation and Aneurism of the Aorta, whether true or false.

Case XXXIII.

Dilatation of the Aorta, and Ossified Plates of the Internal Membrane. (Chronic Aortitis.)

Catherine Ponçeau, domestic, aged 33, admitted for the first time to the hospital Cochin, in 1812. Suffered, for eight days, a violent pain in the left side of the chest, which augmented on inspiration, and was accompanied by frequent cough, with difficult expectoration of mucous sputa mixed with streaks of blood. These symptoms were promptly relieved by bleeding from the arm, expectorant drinks and

juleps. This woman was afflicted for eighteen months with very distinct pulsations in the lateral inferior parts of the neck, which she attributed to an effort in raising a weight. These pulsations, at first rather weak, had become progressively stronger, and were, at last, accompanied by pulsatile pains of the head, difficult, precipitous, and even panting respiration, especially when she went up stairs. These pulsations commenced at the depressions found behind the clavicles, and traversed very nearly the course of the carotids: they were sensible to observation, frequent, more extensive on the right side, isochronous with the pulse and beatings of the heart, and regular like them; they produced a general shock, and the sleep of the patient was frequently disturbed by sudden starts, which might be reasonably attributed to this cause. The slightest moral impression sensibly increased the pulsations; they became, obviously, more violent as soon as we approached the bedside of the patient; and, as if she had a mournful presentiment of the fate which awaited her, shed tears when we asked her any questions, or endeavoured to calm her distress. In other respects, after the example of melancholy people, she was often sad and gay, alternately.

She complained of habitual stunning, her face was red, and occasionally animated; she could retain with ease the horizontal posture, but could not lay any length of time on the left side; she sometimes had palpitation, but the beatings of the heart were usually deep, scarcely sensible, frequent and regular; the

pulse was, in general, frequent, feeble and hardly sensible; respiration, rather easy in a state of repose, was painful on the least exercise.

This patient, after having obtained temporary relief, from the use of antispasmodic draughts, bleeding from the arm, and the application of leeches to the anus, left the hospital the 12th of May of the same year.

Obliged to resume her laborious occupation, she soon experienced the same symptoms, and at the end of six months, again entered the hospital. After having remained stationary till the month of January, these symptoms appeared, at that time, augmented in intensity; the beatings of the heart became very strong, the pulse tense and vibrating; the pulsations, already described, were always isochronous with the beatings of the heart; the carotid arteries, very perceptible, seemed to undergo a very remarkable dilatation, about an inch in extent, and immediately above the clavicle: on applying the fingers to this place, a jarring tremor and peculiar rushing sound were perceived.

On the 19th, the pulse doubled its force and frequency, the whole body was covered with sweat, and the face had a red and lively expression.

During the whole day of the 20th, the patient was remarkably gay; in the evening, however, she felt an inexpressible anxiety, and died suddenly the following night.

Inspection of the Body.—The right pleura presented adhesions; the lungs were healthy; the pericardium contained but a small quantity of serum.

The anterior surface of the heart, was covered with layers of fat; the volume of this organ was about one third larger than in the natural state; the thickness of the walls of the left ventricle had doubled, and its cavity was increased in the same proportion; the right ventricle presented nothing peculiar. The orifice of the aorta was enlarged; the free edges of the aortal valves were thickened and rounded; the tubercle which occupies the middle part was effaced.

The caliber of the aorta, from its origin, as far as the left subclavian, was at least four times the natural size; from the subclavian, as far as its passage through the diaphragm, it was, in like manner, dilated: the interior of this artery was almost entirely covered by osseous plates of various sizes, some of which were bare, although the greater part were covered by the internal membrane. Immediately in front of the origin of the arteria innominata, the aorta was perforated by an aperture which would admit the tip of the fore-finger, and which communicated with a small cellular cyst, rather thick, and about the size of a pigeon's egg.*

After its passage through the diaphragm, the aorta resumed its usual size, and its internal membrane was free from the points of ossification of which we have spoken.

The arteria innominata presented, at its origin, a remarkable dilatation, about an inch in length, with-

* Could the disposition of these parts be attributed to the remains of an old aneurism spontaneously cured? (See, on this subject, the article concerning the treatment and spontaneous cure of aneurism of the aorta.)

out having suffered any rupture of its coats: the carotid arteries offered nothing in any respect extraordinary.

The thyroid gland was large and hard.

The mucous membrane of the stomach was of a reddish-brown colour.

The right lobe of the liver was contracted, shrivelled within, and reduced to much less than the natural size.

The brain and its membranes offered nothing remarkable; the ventricles contained only some drops of serum.

Case XXXIV.

Aneurism of the Aorta; and Chronic Inflammation of its Internal Membrane.

Joseph Bertrand, horse-jockey, aged 68, admitted to the hospital Cochin the 2d of February, 1815, presented rather equivocal symptoms of organic disease of the heart. He had suffered for a long time from short and accelerated respiration; lost his breath shortly after walking or going up stairs; could not lie with the head low, without feeling suffocated; had frequent cough, accompanied with free and puriform expectoration. The pulsations of the heart offered nothing very remarkable, only they appeared a little stronger than natural for two or three days after the patient first entered the hospital, but they soon became weaker, so much so, as to be scarcely sensible: the pulse was weak, but sufficiently regular; the legs were slightly œdematous.

The dyspnœa augmented more and more, and the patient died twelve days after his entry.

Inspection of the Body.—The aorta, from its origin to its curvature, offered an enormous dilatation, which, evidently, affected all the coats.

This vessel was uniformly dilated in its whole circumference: No peculiar cyst could be observed; its internal membrane was throughout yellow, thick, and friable, but did not present a rupture.— The descending aorta was also dilated, but in a much less degree: this dilatation gradually diminished, and terminated at the cœliac artery. In its whole course, the three coats were uniformly dilated; the internal presented yellow plates and had a tubercular appearance. We farther observed, in some points, and especially towards the cœliac trunk, erosions, and spots similar to ecchymosis.

The pericardium adhered in many points to the heart, the cavities, walls and orifices of which were in the normal state.

The lungs adhered to the costal pleura; and the parenchyma of the superior portion was indurated.

Case XXXV.

Dilatation of the Thoracic Aorta, with Latent Phlegmasia of its Internal Membrane.

A man named Julien, aged 56, was admitted to the hospital Cochin on the 9th of March, 1815. He enjoyed in his youth tolerably good health; but about two years before his entry, fell from a coach, on the pavement, and since that period respiration has been more and more difficult, so that he was obliged to stop when walking quick on going up stairs. For nine months past he has been troubled with continual cough, and for the last eight days the limbs have been infil-

trated; he could no longer enjoy rest, remained sitting in his bed, and whenever he attempted to lay in the horizontal posture, was immediately in dread of suffocation. The beatings of the heart were remarkable for their force; and a species of shock could be very distinctly felt across the walls of the thorax. The chest, large and well formed, gave a flat sound at the left: the pulse regular, strong, and vibrating in the right arm, was very weak in the left.

Appetite was retained, thirst was very great, the bowels were free, and the urine was red and sufficiently copious.

He was bled, with momentary relief.

But on the 27th of May, the swelling had increased and extended to the upper extremities; the cough was more frequent, and the dyspnœa more intense; the beatings of the heart seemed to have lost their force, but could be felt in a greater extent.

On the 31st the patient could not remain long in any position, he laid over the edge of his bed, complaining of something in the throat which choked him; respiration was, in fact, much accelerated, and suffocation threatened. The pulsations of the radial artery continued to be much stronger in the right than the left arm, where they were scarcely to be felt.

Nevertheless, during the three following months, the patient remained in nearly the same state, with the exception of alternate increase and diminution of dyspnœa and œdema.

Finally, on the 5th of July, all the symptoms augmented, and the patient died on the 7th.

Inspection of the Body.—The pericardium was closely united to the heart: the adhesion was, howe-

ver, a little looser on the anterior surface than elsewhere, where we could not separate the adventitious membranes which had produced it. The walls of the left ventricle were more than double the natural thickness; its cavity was also enlarged. The valves and orifices were healthy.

The right side of the heart presented nothing extraordinary.

The aorta was dilated from its origin to the place where it gives off the cœliac artery; and the dilatation was equally participated by all three of the coats. Opened in its whole length, it presented a great number of wrinkles, for the most part longitudinal; and many yellow spots, of some lines in extent, on which the internal membrane was very easily torn, while it appeared healthy in the intermediate spaces. The middle coat was thicker than in the natural state. The aortal valves were rather hard in some parts, but in other respects free from disease; the opening which they circumscribed was large. The left subclavian was contracted at its origin, and its caliber was inferior to that of the right subclavian.

The left costal pleura adhered to the corresponding pulmonary pleura: both of them were considerably thickened; we could easily remove from them many membranous layers, some of which were gelatinous. The greater portion of the left lung presented marks of inflammation; the right lung was healthy.

The force of the fall, which this patient sustained, was probably one of the principal causes of the lesion of the aorta. In fact, from this time, the least exercise produced dyspnœa, and embarrassment of the circulation. Many of the symptoms which appeared

later, such as violence of the beatings of the heart, the vibrating pulse, announced a state of hypertrophy of the left ventricle. This energy of the arterial system was calmed by blood-letting; and we have not forgotton that if the beatings of the heart lose their force, they are felt in a greater extent of the chest, as if they had gained in extent, what they had lost in strength.

The inflammation of the pleura and pericardium, which complicated the disease of the heart and aorta, and much increased its severity, proceeded in that slow, insidious and obscure progress, which so frequently baffles the researches of the physician. Nevertheless, the anxiety of the last moments, the jactitation, and the necessity of inclining the head on the chest, would perhaps have made us suspect the existence of pericarditis, because these symptoms are almost constantly present in that phlegmasia.

Case XXXVI.

Dilatation with Alteration of the Descending Thoracic Aorta; Aneurismal Tumour of the same Artery.

Anthony Leblanc, aged 56, porter, of small stature, pale, feeble and thin, entered the hospital Cochin the 25th of October, 1821. We could not examine him till the month of January, 1822, when he said he had been sick for four months only. He had a frequent cough, followed by mucous sputa, floating in a frothy liquid; he did not then spit blood, but had some time before; his respiration was so difficult, that he often feared suffocation; his voice was low,

the chest gave a flat sound at the right side, where respiration was almost gone; night sweats existed; the pulse was small and frequent. (Expect. jul. gum.)

On the following days, sharp pleuritic pains were observed, the oppression was distressing, and the patient longed for death. Marasmus became extreme, the expression of the face was dissolved, the voice extinct, and the patient died on the 10th of February.

Inspection of the Body, thirty-six hours after death.—*Chest.* The costal cartilages are completely ossified; the left side is more sonorous than natural; a considerable quantity of gas escaped, at the first incision. The visceral pleura adhered to the costal, by a false membrane; pellicular on its internal surface; organized, and very vascular on its external surface; easily detached, exhibiting an admirable network of red vessels beneath. The corresponding lung, swelled with blood, was red, and stuffed with large tubercular, mobile, rolling masses. The right side gives a flat sound, and is filled with a serous, red liquid, about two pints or less in quantity; the lung pressed upward and inward, properly speaking, atrophied; it does not contain any tubercular excavation, but is full of granulations, either opaque, or beginning to soften; it adheres to the parietes of the chest, excepting at its anterior part, which is free, and immersed in the liquid spoken of. This portion is covered with false membrane, of a beautiful red colour, and of a fibrinous nature, streaked either with vessels already well developed, or simply, with red globules. The bronchiæ and their branches are red. The heart, about the size of the fist, is flabby, and

soft; the left ventricle, a little dilated, contains clots of blood; the right, very thin, is also a little dilated. The left auricle, sufficiently strong, is contracted; the right, on the contrary, having thin transparent walls, is dilated, and the columnæ, separated from each other, leave intervals, in which we only perceive the serous membrane, crossed by some thin muscular fibres, so delicate, that they merit, for the most part, the name of capillaries. The orifices and their valves are in a healthy state: that of Eustachius is very distinct.

The curve of the dilated aorta offers a caliber of twice the natural size; and presents, externally, protrusions very similar to those of the coecum; each of the three principal cavities of which would contain a small nut, and are situated in front toward the right. The cavity of the aortal curve contains, at its commencement, a lamellated coagulum, two inches long, an inch broad, and half an inch in thickness. The arterial parietes are very thin, in the situation of the elevations described. The internal membrane is strewed or raised by grayish plates, of various size, irregularly disposed, spare and solitary, or confluent and agglomerated, of a fibro-cartilaginous, calcarious, or almost steatomatous nature, separated by slight depressions, from whence results an appearance of roughness: this alteration extends to the trunks, which arise from the convexity of the curvature, and ceases about the middle of the carotids. The thoracic aorta, generally, is dilated, but immediately behind the heart, it forms an aneurismal dilatation, as large, at least, as the organ itself. The tumour is more developed behind and toward the left; is irre-

gularly ovoid; and has not contracted any close adhesion with the surrounding parts, but is united by cellular bands to the œsophagus, to the bronchial ganglions, which are much enlarged, and to the origin of the bronchiæ: the neighbouring vertebræ have not undergone any change. The aneurismal cyst is filled with a lamellated coagulum, forming a hollow cylinder, unequally thick at its anterior and posterior walls: there is, in fact, only a few fibrinous layers in front, while behind they are very numerous. The blood is found in contact with the most recent layers: when these are macerated, or, as it were, washed, they present a grayish white colour, separated by plates of bright red, formed of globules of arterial blood, transformed into vessels, or at least perfectly imitating them by being disposed in a regular series, and a diverging form. The surface, immediately in contact with the blood, is membranous, smooth, and creased with wrinkles, which give it an aspect resembling that of the internal surface of the vagina. The parietes of this fibrinous canal are an inch or more in thickness, backward: the most recent laminæ adhere to the others only at some points, and are, if we may so say, floating: they are so much the more condensed the nearer they are to the walls of the aorta. At the same time, the external cylinders are longer than the others, and their length diminishes thus gradually to the most internal: from whence it results, that the tube formed by the conjoined cylinders, has a pyriform figure; very thick in the centre, thin, and, as it were, sharp at the extremities: its different layers adhere to each other by a flaky and almost woolly texture: their corresponding surfaces are unequal,

slightly rough and rugged. The aneurismal sac, disengaged from the fibrinous mass which has been described, did not present a projecting border, which commonly indicates the place where the coats of the artery have been ruptured: the walls of this sac, very thin, throughout transparent in some points, and deeply disorganized, offer, on the interior, a reticulated appearance analogous to that of the ventricular cavities, a kind of fibrinous network, the numerous columns of which are separated by small depressions, which appear to appertain to the bruised middle membrane, and, so to speak, perforated with erosions. The most minute dissection has demonstrated that the three coats of the dilated artery were included in the composition of the cyst. The abdominal aorta, as well as a portion of the thoracic, were equally dilated in the whole of their circumference, the iliac and pelvic arteries offered plates of the same kind as those already described above; some of them, a line thick, and calcarious, had elevated and even torn the internal membrane.

In the preceding cases, the dilatation existed without being accompanied with a lamellated coagulum; in this, on the contrary, the dilatation coincides with the formation of a very large coagulum, presenting, in some of the layers, manifest traces of organization.

Farthermore, in all these cases we may remark a constant lesion, consisting of an alteration of the internal membrane, or even of the whole structure of the aorta. From what we have said in the preceding chapter, the nature of this alteration can be no longer doubtful; it is certainly inflammatory.

The facts we have related are examples of dilatation of the whole cylinder of the aorta: we shall now proceed to present a case in which the dilatation was lateral, and prove that this kind of aneurism, denied by a celebrated surgeon, can no longer be called in question.

Case XXXVII.

Strong and sonorous Pulsations under the Sternum, and the Cartilages of the first Ribs of the right Side; Ordinary Symptoms of Disease of the Heart.—True Aneurism of the Substernal Aorta; Ossification and Ulcerations of the same Artery; Hypertrophy, with Dilatation of the left Ventricle.

John Hivet, terrace-maker, aged sixty-five, not very strongly constituted, of middling stature and form, hair ash-coloured, entered the Cochin hospital the 28th of November, 1822. He suffered, for three years, palpitations, and stifling, which he attributed to frequent catarrhal affections, with which he had been affected; a new bronchial catarrh, which he had contracted in the month of September last, obliged him to keep his bed; and since that period he could no longer attend to his laborious occupation. The phenomena which he presented, on entering, were the following. Complexion of a pale yellow; heaviness of the head; vertigo, stunning, numbness of the lower limbs, so great that the patient thought them dead; cough with thick mucous glutinous sputa; sentiment of weakness in the epigastric region, with tendency to sickness; oppression on the least exercise; pulse irregular, unequal, intermittent, without harmony

with the beatings of the heart; tongue rather humid, yellow in the middle, red on the edges, inappetence, and sometimes nausea.

Auscultation.—The murmur of respiration is heard very distinctly in the whole circumference of the chest; the pulsations of the heart are heard of equal force in the whole extent of the chest: those of the ventricles, explored in the præcordial region, are very unequal, intermittent, clear and sonorous, but of moderate impulsation: among the feeble pulsations, active sudden contractions, are observed analogous to the spring of a bow. Under the sternum, and the cartilages of the first sternal ribs of the right side, simple pulsations, accompanied by a very clear, almost clanging sound, are heard, mingled with a peculiar hissing. The contractions of the auricles are plainly heard towards the clavicles; but can only be distinguished very confusedly in the region of the heart.

Diagnosis.—Aneurism of the substernal aorta, hypertrophy with dilatation of the ventricles of the heart.

Prescription.—Till. orang. jul. digit: pedil. synap.

The following days the patient was better; the sleep was tranquil, the pulse less regular, and in a state of repose, respiration appeared not in the least embarrassed. The 8th and 9th of September, considerable oppression renewed; the heart beats the hand which explores it by a large surface; the beatings of the left ventricle, less irregular than at its entrance, are accompanied by a hissing sound which appears to be only the reverberation of that which exists under the sternum and the cartilages of the ribs spoken of.—The tinct. of digitalis was gradually augmented:

on the 14th of December, he took sixty-five drops.—On the 19th of the same month, the patient presented signs of mental alienation, and the face, singularly discomposed, exhibited a stupid smile.

(Digitalis omitted.) 20th, Mental alienation still more evident; patient imagines he is going to be shot; and says, tranquilly, with an air of positive conviction, that he sees arranged all the preparations for his punishment: he asks pardon of all the world, &c.—During the whole of the same day, he imagined also that he was at a fishing in his own country. The pulse was slow, but very irregular: from time to time several pulsations would follow close upon each other:—

On the 21st in the morning, this kind of tranquil delirium continued; the cheeks were highly injected, the eyes brilliant, which induced us to bleed in the foot.

In the evening the patient appeared more composed, his face less discoloured; notwithstanding, he was more and more persuaded of approaching death. 22d.—Face wrinkled, entirely discomposed, air of stupid astonishment, unmeaning smiles, torpor. 23d, at the morning visit, the patient seemed to have regained the use of his reason: but he had fever, the face was injected, the tongue dry and a little coated, skin warm, (till. orang. soup.) The rational moments did not last long; in fact, when they brought him his soup, he refused to take it, under pretext that they wished to poison him; and it was with great difficulty that they could persuade him. 24th, 26th, 27th, reason was perfectly re-established: the patient, who recollected his wanderings of mind, could not con-

ceive how he could have committed them. 28th, and 29th, reason entire; the patient only complains as usual of weakness and oppression; says he has taken cold, and refers the seat of his disease, under the sternum, where the spits are, he says, adherent. The following days we returned to the use of digitalis. 11th January, 1823, considerable oppression, white opaque adhesive sputa: change in the general appearance. 13th, reason again subverted, the patient thinking he saw cannons pointed at him.—Finally, on the 14th, he died at seven o'clock in the morning, after long continued rattles.

Inspection of the Body, forty-eight Hours after Death.

1st. *Exterior appearances.*—No infiltration, redness of the under surfaces from pressure.

2nd. *Respiratory and circulatory organs.*—The left side of the chest contains at least a pint of red-coloured serum. Each of the lungs is crepitant throughout; but the left, compressed by the effusion, is much less voluminous than the right: the mucous membrane of the bronchia is red.—The pericardium is injected.—The heart, divested of the enormous clots which it contains, is more than one-third larger than the fist of the subject; the right cavities offer nothing remarkable, excepting the redness of their internal membrane. The left cavities were dilated to such an extent that the aortic ventricle, three times larger than the pulmonary, might contain a goose egg; its walls, towards the base, are about six lines in thickness; the corresponding auricle, equally dilated, is manifestly hypertrophied. No remarkable lesion of the orifices.—In the whole substernal portion, the aorta dilated in

every direction, forms an ovoid tumour about the size of the fist; the aneurismal sac, composed of three arterial coats, contains a fibrinous white clot, which is not divided into distinct concentric layers, placed one upon the other; the arterial walls are thickened, and, if we may so say, hypertrophied. The portion of the pericardium reflected on the origin of the aorta and cellular membrane of this artery, are red and injected: the internal membrane is, as it were, cribbled with ulcerations, separated in many points; underneath it is a pultaceous grumous atheromatous yellow matter; in other respects, this membrane is easily separated from the others; in the rest of its extent, the aorta, manifestly, preserves its usual caliber, but its walls, hard and thickened, creak under the scalpel: the internal surface is, as it were, plated with cartilaginous or calcarious laminæ, some of which have torn through the internal membrane, and present themselves bare in the midst of the blood: we meet, besides, with numerous ulcers, many of them very deep and of a black colour; others, more superficial, affecting only the internal membrane, which, even in the intervals, is unequal and rough. The alteration extends to the arteries immediately arising from the aorta, and diminishes the orifices of those which arise from the convexity of the curve in an unequal manner.

3d. *Abdominal organs.*—The portion of the peritoneum which covers the last circumvolutions of the small intestines, and the corresponding abdominal surface is covered by a pellicular false membrane, of a yellow colour, and perfectly resembling concrete pus: the circumvolutions themselves depressed into the cavity of

the pelvis, are deep red on the exterior. The mucous membrane of the stomach is spotted of a bright red colour, which contrasts with the whiteness of that of the duodenum. The small intestine contains a liquid, reddish bloody matter analogous to the lees of wine; its mucous membrane, somewhat soaked with this fluid, is of a deep red colour; its capillary vessels are admirably injected, and form very minute ramifications almost throughout; the mucous membrane of the folds of the ilium, is covered by a grayish layer, which adheres to it rather strongly, and resembles entirely the false membrane which *existed* on the corresponding peritoneum. The texture of the intestine, almost faded, may be torn with great facility. The mucous membrane of the large intestine is rose-coloured.

4th. *Encephalic organs.*—The membranes are slightly thickened, and of rather a milky colour; the cerebral ventricles contain a large quantity of whitish serum.

Case XXXVIII.

Simple Pulsations very strong, accompanied with the Bellows Sound in the Region of the Sternum, and Superior Lateral part of the right side of the Chest; ordinary Symptoms of Diseases of the Heart.—Enormous Aneurism of the Substernal Aorta without rupture of its Membranes, very considerable Hypertrophy of the Heart.

Peter Pinçon, aged 35, mattress-maker, of a sanguine bilious temperament, chesnut coloured hair and strong constitution, entered the hospital Cochin the 20th of May, 1823. He suffered for many years a difficulty of respiration, particularly noticed during exercise when a little violent; this was accompanied

by pulsations of the heart, to which, at other times, he paid little attention. These symptoms had become more considerable within three months, and were complicated with gastric symptoms, for which some leeches were applied.

State of the patient at his entrance.—Face livid, leaden coloured and swollen; infiltration of the extremities, particularly the left; speech interrupted, orthopnœa, insomnia, starting in sleep; pulse regular, without frequency, developed, hard and vibrating in the right arm, very small in the left, cough, viscous sputa; tongue moist and white.

Auscultation.—Mucous rale in almost the whole of the chest; simple pulsations very strong; sibilant under the middle and superior part of the sternum, and under the cartilages of the first ribs of the right side as far as the clavicle. The bellows sound is heard very distinctly in the precordial region, and obscures the sound of the ventricles; the contractions of which, isochronous with the simple pulsations indicated, raise up the cylinder rather forcibly.

Diagnosis.—Aneurism of the ascending aorta, hypertrophy of the heart; bronchial catarrh (a bleeding of three pallets. Ptis. aperit. jul. tinct. Digital.)

Bleeding diminished the oppression a little. 23d. Three days after entrance, return of dyspnœa; extreme anxiety, sensation of an inconvenient weight in the precordial region and towards the xyphoid cartilage; prickling of the limbs, abdomen in good order. Following days some melioration, face less livid, respiration more free, same state of the pulse, beatings of the jugular veins isochronous with those of the carotids; the patient can rise and eat his half por-

tion; goes up stairs with much difficulty, and is obliged to stop at every step. 5th of June, in the evening, paroxysm of violent dyspnœa; almost convulsive contractions of the common respiratory muscles, simultaneous or more properly speaking synergical contractions of the muscles of the neck, lower jaw and alæ of the nose; impending suffocation, livid face, cold sweats, (bled ℥ xii.) night sufficiently tranquil; two following days some relief. 8th, New paroxysm, (bled ℥ xii.) again relieved. 9th, at half past eleven in the evening, a most terrific attack. The patient in continual fear of approaching suffocation, the hands supported on the bed, the face decomposed and covered with cold sweat, the eyes dull and staring, the mouth gaping, the nostrils dilated, struggling apparently with all his strength against the obstacles opposed to respiration, beatings of the heart strong, resembling the blows of a hammer; all the arteries beat with violence, and the eye can distinguish the pulsations of the upper extremities in almost their whole course.

Blood-letting was resorted to: but the vein furnished only a small quantity of thick, black blood, which dribbled away and coagulated almost immediately. We prescribed a foot bath and sinapisms. Finally, after some hours the patient recovered his usual health. 11th, oppression renewed, (blister to the chest.) Until the 20th, little change. The hand applied over the region where the pulsations were noticed, feels very distinctly a kind of vibratory tremor. From the 20th to the 25th, the expression altered more and more; œdema invaded the right arm, the pulse lost its vibration; the patient is so oppressed, that he cannot pronounce two words in succession; he has no longer strength to sustain himself, and the body,

obeying the laws of gravitation, falls on the bed, after lifting him up; he no longer has any appetite for food; finally, exhaustion of strength and oppression is increased; the patient in the reclined posture slides to the foot of the bed: his eyes are dull, humid, and inanimate, respiration is at every moment on the point of leaving him; he died on the 2d of July, at half past one, while attempting to drink half a glass of wine, left him by his parents.

*Inspection of the Body, twenty Hours after Death.**

External appearance.—Body robust, enormously infiltrated, flat sound in the region of the sternum, and at the right side.

2d. *Circulating and respiratory organs.*—The sternum and the ribs are without alteration. Each cavity of the pleura contains about half a pint of bloody serum. The heart, three times as large as the fist of the subject, and the substernal aorta, dilated to the size of a full grown fœtal head, occupied nearly three quarters of the thoracic cavity. The heart is situated transversely, and contains an enormous quantity of blood; it is rounded, or rather formed like a pouch, and its texture appears firmer at the left, than the right side; its vertical diameter is about five inches, and its transverse is about eight. Its vessels, very large and swollen, ramify on the surface, where they form a plexus consisting of a great number of branches. Emptied of the clots of blood, it still retains an extraordinary size. The left ventricle descends lower than the right, its cavity is enormous, and might contain the fist; its walls towards the base

* See plate 11th.

are eight to nine lines thick; they collapse after the incision, from their own weight. The muscular pillars are very numerous and very large; their texture is a little yellow, reddens and becomes vermilion coloured, on exposure to the air. The left auricle reverted offers a capacity somewhat less than one-third that of the ventricle; its walls are increased in thickness, and its internal membrane red. The mitral valves are healthy. The right ventricle is dilated, without augmentation or sensible diminution of thickness of its walls, but with considerable development of its fleshy columnæ. The right auriculo-ventricular orifice is much dilated, its valves are red, as well as the internal membrane of the cavities which it separates, redness is deeper than that of the left cavities. The interventricular septum participates in the hypertrophia of the left ventricle, to which it appears properly to appertain. The substernal aorta, dilated as far as the origin of the vessels of the curvature, forms an aneurismal tumour, irregularly ovoid, the dilatation being much less in the posterior, than in the lateral and anterior walls. This tumour projects and seems to lay within the right side of the thorax, where it corresponds to the four first ribs and their cartilages; it is composed of the three arterial coats, uniformly dilated, and much thickened. The internal coat is of a very deep red, which is prolonged into the remaining portion of the aorta, and many of the branches which arise from it; it is strewed with small ulcers, and an infinity of calcarious or yellow cartilaginous laminæ, situated beneath its proper texture, some of which are nevertheless denuded in the arterial aneurismal cavity. This is filled with enormous clots of blood, not dis-

posed in concentric layers, but confusedly aggregated, and for the most part recent; some of them are more ancient, and have a fleshy appearance. The aneurismal tumour terminates by an insensible and gentle graduation towards the left subclavian, and is slightly knotted at the surface.

On leaving the subclavian, the aorta resumes its natural caliber, but offers along its internal membrane some yellow plates of commencing ossification. The lines are, for the most part, crepitant, and slightly swollen; and so compressed by the heart and the aortic aneurism, as to be pushed up against the clavicles and ribs. Their mucous membrane is red, and covered with thickened mucus.

3d. *Abdominal organs.* The spleen and liver very large, and swollen with blood. The texture of the latter is reddish brown; an infinite number of blackish points on it are observed, which appear to be nothing more than the blood, which, at first merely excreted, has become in some way combined with its texture: to this pathological state of the liver, might be given the name of *hepatic apoplexy.* The gastro-intestinal vessels are also swollen with blood, and from this passive congestion results a deep redness of the mucous membrane of the stomach and the intestines.

Let us glance, for a moment, at the preceding observations, and ascertain whether it would have been possible to have distinguished aneurism of the aorta without the assistance of auscultation: to resolve this problem, let us recapitulate the principal symptoms observed.

In the first patient, the symptoms were palpitations, difficulty of breathing while in exercise, verti-

go, tendency to fainting, undefinable sensations in the epigastrium; very irregular pulse, not harmonious with the pulsations of the heart. But these various symptoms are common also to many other diseases, and do not fairly announce any thing more than obstruction of the circulation and respiration. The characters of the pulse, which seemed at first to be a very valuable symptom, did not prove to be so. For, besides that they are observed in many cases, we may remark that they were not present at all in our second patient. In this one, the phenomena which authors regard as those which belong to what they vaguely call aneurism of the heart, were present to their full extent. It is evident that no one of these phenomena indicated in a positive manner dilatation of the aorta. By confining himself to ordinary methods of explanation, the physician would have announced an aneurism of the heart, and would have explained all the symptoms observed, by the existence of that disease, while, in fact, they were in part produced by the compression of the lungs, and the disease of the heart itself was very probably consecutive to that of the aorta. He would have thus taken, as not unfrequently happens, the effect for the cause. The symptoms, then, which we have enumerated, would not have been sufficient for us to have recognised aneurism of the aorta; but we wish that they had been sufficient for the diagnosis; although they never could have indicated to us in what position of the aorta the aneurism had its seat. We may rest assured, then, that in both patients we may justly refer the honour of the diagnosis to the practice of auscultation. However this may be, the two cases concur, with a great

number of similar ones, to demonstrate how much the doctrine of Scarpa, relative to the formation of the aneurismal cyst, is at variance with the process of nature. The existence of true aneurisms, without rupture of the arterial membranes, is proved by such numerous and authentic facts, that we can scarcely conceive how the opinion of the celebrated surgeon of Pavia should find partisans. It is equally certain, that the internal and middle coats of arteries may be ulcerated, without an aneurismal sac being necessarily and actually formed at the expense of the surrounding cellular tissue. This erosion did, in fact, exist in many points of the aorta, in our two patients, and yet such kinds of cysts were not met with. It is true, that if the patients had lived a longer period, an aneurism might have formed according to the mechanism described by Scarpa; that is, by an infiltration of blood under the peri-arterial tissue.

In the mean time, let us compare the observations on aneurism with rupture of the internal and middle coats of the aorta.

Case XXXIX.

Aneurism of the Substernal Aorta, with Rupture of the Coats, and Communication of the Sac with the Trachea, producing fatal Hemorrhage.—Aortitis.

Girardeau, aged thirty-six, carter, of middle size, and athletic constitution, entered the hospital La Pitie, on account of extreme difficulty of respiration, which augmented in such rapid successions of paroxysms, that he was threatened with instant suffocation. These kinds of accessions resembled pretty nearly

spasmodic asthma: they were accompanied with a stridulous sound perfectly resembling the peculiar sound heard when children are attacked with the croup. This disease was regarded as an *aneurism of the heart*, although no pain had existed in the precordial region, and the patient had never complained of palpitation.

The principal treatment consisted of frequent abstractions of blood by leeches or the lancet, which constantly procured relief. The patient, getting wearied, left the house where he had passed the months of February and March, resumed his usual occupation, which he was soon compelled to abandon, and was afterwards admitted to the hospital Cochin, the 4th of May, 1821. On the day before his entry, there supervened, in the course of an access of cough, vomiting of a large quantity of blood, which lasted only a few minutes, but which was so abundant as to fill four wash-hand basins. A physician, called at the moment, immediately opened the veins of the arm and foot, and allowed the blood to flow until syncope. The hemorrhage was promptly arrested. On recovery, the patient complained of great pain in the chest. On entrance, respiration was also much impeded, but we did not think it proper to prescribe a new bleeding, on account of the smallness of the pulse, and the enormous quantity of blood lost the day before: we confined him to very strict diet, and demulcent drinks.

On the night of the 4th and 5th instant, the patient was taken suddenly with extreme difficulty of respiration, rending pains, and very acute pain in the course of the bronchia. MM. Lecore and Courtis

students of the hospital, wished to bleed him; but he refused, saying he had no more blood. The pulse was very weak, and the face remarkably pale. Two cups applied to the chest, and some time after a large sinapism allayed the pain.

On the morrow, the patient coughed a little, and complained of pains in the chest. (Emuls. elect.) The day was quite calm; but in the night, towards one o'clock, he was again taken with spitting of a large quantity of blood, violent dyspnœa and loss of speech, and died a short time after, the mouth and nostrils filled with clots of blood.

Inspection of the Body.—Under the superior and middle portion of the sternum, which was slightly eroded, was a tumour of a brown colour, about the size of a hen's egg: this tumour was formed by the dilatation of a portion of the aorta, comprised between the origin of that artery, and the commencement of the vessels which proceed from the curvature; its anterior portion corresponded to the sternum, and its posterior to the trachea.

On opening the tumour at its anterior part, we observed several fibrinous layers placed over each other, of the colour of baked meat, which could be separated with the greatest ease. The lamellated coagulum had the same consistence as far as the centre; but at this point we found an almost liquid layer of black blood, separated from the solid part by a kind of black and injected membrane. The aneurismal sac having been completely emptied, we recognised at first an opening communicating between it and the aorta. Toward the middle part of the posterior wall of the tumour, we saw an irregular opening, with un-

equal and frangous edges, which communicated with the trachea, and was about four lines in length, and two in breadth. The perforation of the trachea was formed at the expense of the membrane between the cartilaginous rings.

A great quantity of coagulated blood was observed in the trachea, mouth and larynx; the lungs contained none of it, and were healthy, as well as the heart.

Case XL.

Aortitis with Aneurismal Tumour, which opened into the Œsophagus.

John Francis Guerin, blacksmith, aged twenty-six, of a strong constitution, had never been affected with disease, excepting in the winter of 1804, when he was taken with a tertian fever, which continued six months. One day in the month of May, 1805, while at work, he all at once became suffocated; and going out as quickly as possible, vomited a considerable quantity of black and coagulated blood: he soon returned to his shop, resumed his painful labour, and continued it for fifteen days, although his strength had very sensibly diminished, and he had suffered from want of rest, oppressed breathing, and pains in *the stomach, chest and back.* The physicians of his country (Monthery) not being able to discover his disease, gave him a great variety of remedies, which produced no relief. One of them thought he was affected with enlargement of the *great* and *small lobes* of the liver, and prescribed for him accordingly. The patient, alarmed at his condition, which became every day more and

more serious, had himself conveyed, the first of August, 1805, to the hospital Cochin, in a wagon, the jolting of which hurt him very much. He presented the following phenomena: respiration was embarrassed; he felt a fixed and constant pain in the middle of the back, and front of the chest; which increased by pressure on the pit of the stomach. The expression of the face was much changed; pulse frequent and rather hard; anxiety was extreme; appetite gone; skin hot, halituous; bowels free.

On the third day after entrance twenty leeches were applied to the most painful part of the chest. This was followed by some relief, the cough was moderated as well as the dyspnœa; the pulse retained its force and frequency. Next day the patient complained of having suffered a good deal during the night; his respiration was very laborious; and the rattles had already commenced. About two o'clock in the afternoon, after having remained some time about, and been assisted to walk in the hall Guerin, retired to bed, placed himself in the sitting posture, coughed, spit some blood, fell backward upon his pillow, in three successive motions, grew pale, had a kind of syncope, hiccup, and rattles, and died in about ten minutes.

Inspection of the body.—The lungs were voluminous, and perfectly healthy. The pericardium contained about six ounces of turbid serum, mixed with small albuminous flakes, of a slight green colour. The internal surface was covered with a somewhat thin albuminous layer, and the portion which was reflected on the heart, was covered with a firmer adventitious coat, presenting on the anterior part of the right ventricle, and from the origin of the pulmona-

ry artery, two or three white patches, of a cartilaginous appearance.

The heart almost completely void of blood, presented nothing remarkable; the aorta was healthy as far as the middle part of the curvature, where its concavity presented an opening, the edges of which were unequal and apparently lacerated. The *cleft* gave passage to the blood, which filled the aneurismal sac. This was capable of containing a large hen's egg, and laid up against the bodies of the 3d and 4th dorsal vertebræ, which were not altered; it was covered anteriorly by the trachea and esophagus; its internal surface was coated with fibrinous layers, so much the more dense as they were nearer the surface. Torn on its anterior lateral right side, it presented an opening capable of receiving the fore finger; the esophagus adhered to this point of the aneurism, and was also *perforated*, so that the cavity of the aneurismal sac communicated freely with that of the duct, by means of which a considerable deposition of blood took place into the stomach: this was separated into two portions, the one serous, and the other fibrinous, the latter, or the *clot*, weighed about three pounds. The small intestine was also filled, in almost its whole length, with coagulated blood.

This termination of aneurism of the aorta is very rare. The beautiful work of Morgagni, so fruitful in facts of every kind, does not contain a single example belonging to that celebrated observer; but he offers one borrowed from Matanus: unfortunately, the case is remarkably concise: it is as follows:—

"Nondum dimidium mensis Aprilis, anni 1755, inceperat, quo vir quidam ex aneurismate vita functus

opportunam peragendarum observationum occasionum præbuit anatomicis.

"Ventriculus insigni mole præditus inventus est, totusque refertus, sanguine qui ex aneurismate in aorta constituto profluxerat. Aneurismaticus interea tumor, qui œsophagi parietibus adhaerebat, paulatim discissus, talem sibi transitum aperuerat ut permagna sanguinis quantitas in ventriculum ipsum delapsa fuerit."

About the same period, Sauvage noticed in his Nosology an example of the rupture of an aneurism of the aorta into the esophagus, with some of the symptoms which had preceded it.

Remarks on a similar case, collected in the wards of M. Bourdier, by M. O'Reardon, and published in the Bulletin of the Medical Society of Emulation, were much more interesting in relation to the history of symptoms, as well as the anatomical description; but the author is deceived in thinking that he with M. Dupuytren were the only persons who had observed this termination of aneurism. The anatomical preparation confirming this mode of termination was presented by one of our students, to M. Dupuytren; in fact, it is the very same of which this celebrated surgeon is said to have been a witness, and which Corvisart has reported in the second edition of his *Essai sur les Maladies Organiques du cœur*, (*page* 336.)

Case XLI.

Aneurism of the Abdominal Aorta.

A man about 37 years of age, an old soldier, of a strong constitution, was admitted into the Hospital

Cochin. Attempting one day, as he told us, to leap across a rather wide stream, his foot slipt, and he fell on the opposite bank, which occasioned him to make a violent exertion to prevent himself from falling; acute pain supervened in the dorsal region, which neither repose nor frictions would alleviate: several physicians were consulted, all of whom considered the disorder as rheumatic, and recommended baths, stimulating frictions, and applications of wool to the affected parts. These means were useless, the patient was sent to Aix-la-Chapelle to take the sulphurous dash, which appeared to increase the pain; the face was pale, thin and pinched, the appetite feeble, and the bowels indolent.

M. Dejaer, principal physican of the military hospital of Liege, at that time attached to the hospital Cochin in capacity of house physician, has noted this disease in his case book, under the title of chronic lumbago.

On the day after his entry, on the appearance of some gastric symptoms, we prescribed an emetic, which was taken with repugnance. The patient vomited freely, and in the midst of efforts raised a little blood. From this moment he became extremely discouraged, and seemed to foresee the disastrous consequences of the vomiting. The expression of the face was profoundly altered; the pulse became weak, and somewhat irregular; there was also a little spitting of blood; respiration was more and more embarrassed, and death occurred on the day after the administration of the emetic.

Inspection of the Body.—The abdominal aorta was affected with aneurism, just where it leaves the dia-

phragm. This artery presented a rounded opening, which communicated with an enormous tumour mounting up, across the aortic opening, and obtruding considerably into the posterior mediastinum. The sac which surrounded this tumour was filled by fibrinous layers placed over each other, as is usually met with in chronic aneurism: the pleura covered the chest, where it presented, and, at its superior part, had a rent which allowed a great deal of blood to escape into that cavity.

Case XLII.

Aneurism of the Thoracic and Abdominal Aorta, with Erosion of the Arterial Parietes.—Hydropericardium, &c.

Lelong, lock-smith aged, 40, of an athletic constitution, had suffered rather an acute pain for two years in the region of the right kidney. At the beginning of the year 1804 his strength had diminished, and there supervened at this period a bilious habit, with spitting of mucous substances mixed with blood, which determined him to enter the Hotel Dieu. Two bleedings arrested the hemoptysis in a few days; but the weakness increased, the face became œdematous, and Lelong left that hospital in a state of suffering and debility, which constrained him a short time afterwards to enter ours. It was at the commencement of the year 1805. He complained of a constant rather acute pain extending along the region of the kidneys; the pulse was full, hard and frequent.

We bled the patient, and prescribed mucilaginous drinks with nitrate of potass.

But these means did not produce any change; the

pain became, on the contrary, more acute toward the end of the month, and extended sometimes in the course of the right sciatic nerve.

On the 9th of March, there supervened in the right side, towards the 8th and 9th ribs, a very acute pain, which appeared to diminish that in the lumbar region, both increased on pressure.

On the 10th, the lumbar pain became suddenly intolerable, and tears of anguish were extorted from the patient, who said he suffered from nervous spasms of the muscles of that part, which it was impossible to ascertain by the touch. An anodyne draught procured some relief, and a little sleep.

On the 12th, after a warm dispute with his wife, this man cried out suddenly, that his pain was insupportable. We again had recourse to anodynes; nevertheless, in about an hour, he grew pale, or rather yellow, and desired to go to the closet, but could not satisfy the want of nature; his pulse became excessively rapid, quick, less strong and less developed; the skin became the seat of a dry and pricking heat, afterwards he was taken with hiccup and convulsions, made violent and useless efforts to vomit; finally, his face was covered with cold sweat, and he lost his senses. Replaced in bed, he soon revived and complained in a feeble and dying tone, that the whole lower half of the body was paralyzed.* The thighs and legs were smartly pinched, without producing sensation; the pulse became gradually weaker, the words died on his lips, he seemed to fall into a sleep, in fact, he

* This Paraplegia appears to us to be owing to an interruption of the course of the blood in the Abdominal Aorta.

slept for some minutes, but it was a sleep from which he never awoke.

Inspection of the body.—The left cavity of the chest contained several ounces of limpid citrine serum. The lungs were healthy, excepting that we found, in each of them, at the superior part, a tubercle in the second stage of development, about the size of a filbert, and on the surface of that part some appearance of a cicatrix.

The pericardium contained about sixteen ounces of limpid greenish serum, and in other respects was healthy. The cavities of the heart were almost entirely free of blood. The walls of the left ventricle were evidently thickened, and its cavity was about a third larger than in the natural state. The pulmonary artery, the aorta, and the branches proceeding from it were healthy.

The descending aorta presented on its left side, about two inches above the diaphragm, an aneurismal sac about the size of a hen's egg. The artery communicated with this sac by an oval opening, the greatest diameter of which corresponded with the course of that vessel, and was about an inch in extent. The internal and middle coats were torn, everted, and partly destroyed, and the external had concurred with the surrounding cellular tissue to form the aneurismal sac, the walls of which were firm, consistent, about a line in thickness, and smooth on their internal surface.

On opening the abdomen, nearly a pint of bloody serum was evacuated. The whole fatty tissue which covers the peritoneum posteriorly, the gastro-hepatic and gastro-splenic omenta, and a part of the mesentery, appear infiltrated with a large quantity of black

and coagulated blood. In the region of the right kidney we discovered an oblong tumour, equal to the size of the head of a child ten years old, covered with a very thick layer of coagulated blood. This layer being raised, the kidney appeared of its natural state, and raised by a mass of a fleshy appearance, which was, in fact, a second aneurism four or five times larger than the first. This aneurism was enveloped by the right pillar of the diaphragm, and the superior of the psoas muscle of the same side, which had been very much distended, and formed on the outside and in front of it a kind of muscular coat. Its cavity was filled with fibrinous concretions, more consistent the nearer they were to the external surface. Its external side presented a large cleft, through which the blood had flowed into the adjoining cellular tissue; its posterior side corresponded with the quadratus lumborum muscle: the internal surface exhibited two other openings: one of them, the largest, and posterior, adhered closely by the edges to the right side of the bodies of the first and second lumbar vertebræ, worn rather deeply, without any lesion of the intermediate fibro-cartilage. The other was of an oval form, passing in the direction of the aorta, at the internal and posterior part of which it was placed, and formed the communication of the tumour with that artery. The greatest diameter of the opening was about an inch and a half in extent. On examining its edges, we saw portions of the fibrous coat, which was everted and adherent to the aneurismal sac, with which they seemed to be confounded in some places: underneath, the aorta was about one quarter smaller than in the natural state.

The various morbid lesions which we have observed, have not presented during life any positive signs of their existence.

After the post mortem examination, it was easy to explain the pain which the patient had suffered in the region of the kidney and different parts of the chest; but these pains, while the patient was alive, might have been attributed to very different causes from those which really produced them.

What is still more astonishing, is, that the patient, examined frequently with every possible attention, and observed at the hospital for several days, did not present any symptom of organic disease of the heart which was revealed on opening the body after death. For, hardness of the pulse, rather a constant symptom of hypertrophy of the left ventricle, isolated from every other symptom, is not sufficient to establish the diagnosis.

We find a case in Morgagni very analagous to the preceding.*

* Letter 40, page 389, (trad. de MM. Desormeaux et Destouet.)

ARTICLE II.

General History of Dilatation and Aneurism of the Aorta.

SECTION I.—FORMATION AND ANATOMY OF THE VARIOUS KINDS OF ANEURISMS.

1. *Of Dilatation of the whole Circumference of the Aorta.*

We have seen, in the first chapter, that one of the effects of inflammation of the aorta is the loss of the natural elasticity and resistance of its walls; properties much more developed in the middle than in the other membranes. This effect is precisely the condition which most favours the dilatation of the arterial tube. All the world knows that the column of blood which flows in the aorta is propelled by a double motion; one of which takes place parallel to the axis of the vessel, while the other takes place perpendicularly or obliquely to that axis, and tends to separate the opposite walls of the artery. It is by virtue of the resistance and elasticity of its tissue, that the aorta preserves its natural caliber, amid the efforts which tend to enlarge it. But from the moment that inflammation has deprived this tissue of its power of reaction, dilatation is easily effected, and its extent augments in direct proportion to the energy of the dilating powers, and the weakness of the resisting walls. We see, then, that the phlegmasia of the arterial texture which accompanies the dilatation, is one of the principal elements. The dilatation of

which we are speaking here, occupies the whole circumference of the aorta. We have seen it extend nearly the whole length of this artery, although it is situated most commonly in the ascending portion and curvature of the aorta. The walls are thickened as well as dilated, and we may observe all the changes in them which we have described in the preceding chapters. The dilatation is sometimes enormous, so that the aorta is double, triple, or even quadruple its natural size, and has a somewhat striking resemblance to the arch of the colon: this resemblance is more perceptible, because the exterior of the artery frequently presents bulgings analagous to those of the intestine above mentioned. The internal depressions correspond to these projections, and in the situation of these *sinuses* the walls are thinned and semitransparent. We may conceive, indeed, that these cavities, these partial dilatations, are the first degree of an aneurism by rupture, which ends by being *engrafted* in some mode on the dilated artery. We thought we should be able to distinguish the general dilatation of the aorta from the proper aneurismal dilatation by this circumstance, that the first is not accompanied by a lamellated coagulum. This distinction is not without foundation: although it is not entirely beyond dispute, in the individual of Case XXXVI. we found a coagulum, which formed a true fibrinous cylinder, without the presence of which the blood would have effused through the ulcerations of the aorta with which the walls of the aorta were *perforated*. In this case the dilatation was puriform, and situated on the descending pectoral aorta.

2. *Of Lateral and Partial Dilatation of the Aorta, or the true Aneurism of Authors.*

Sometimes the aorta, instead of being dilated in its whole circumference, is only so in a portion of more or less extent. This partial dilatation constitutes the *true* aneurism of authors; and is met with, ordinarily, on the substernal aorta, and curvature of that artery. The anterior and lateral parts of the vessel are the seat of the dilatation, while the posterior wall either scarcely participates in it, or does not participate in it at all. The dilatation is sometimes so voluminous, that it equals the size of the full-grown fœtal head. The tumour generally inclines towards the right side of the thorax. We have been able to dissect easily the three arterial coats in most cases of this kind: they have constantly presented to us traces of phlegmasia, such as osseous plicæ, redness, atheromatous suppuration, ulcerations, &c. We have found in the cavity of the aneurismal sac portions of coagulum, irregularly aggregated, and seldom arranged in layers. To understand the formation of this aneurism, it is sufficient to admit that there is less resistance in the dilating parts, or a disposition more favourable to the action of dilating causes.

3. *Of Aneurism by Ulceration of the Parietes, or false Aneurism of Authors.*

Aneurism by ulceration of the internal and middle coats, is the only one which the illustrious Scarpa will admit. We have proved that true aneurism is not a pure chimera, as the celebrated surgeon of Pa-

via pretends, but a disease confirmed by positive observation. We shall add, that it is only by a kind of abuse of language that we can allow the name of aneurism to the affection which we shall presently describe, since this last does not consist in dilatation, but destruction of the parietes, and, consequently, in a tumour of blood to which the surrounding parts (so to speak) extend an envelope. Ulceration, in this case, is the principal disease, whilst the formation of a sac, called aneurismal, is only an accident, the same as in *primitive false aneurism*. The wound of the artery is the principal disease, and the *epanchement* of blood is only a circumstance or symptom attending it. It is to be desired, that we do not confound under the same denomination affections entirely different; and that the expression of aneurism, reduced to its etymological signification, should be exclusively appropriated to distinguish dilatation of the arteries.

The mechanism of the formation of what we call aneurism, by rupture of the walls of the aorta, is easy to comprehend. When the internal and middle membranes have been destroyed by an ulceration more or less extensive, the blood, endowed with a lateral movement, gradually elevates the cellular membrane, is infiltrated into the surrounding parts, distends them, is accumulated, and ends by forming a tumour more or less voluminous. The experiments made by Nicholls before the Royal Society of London, and repeated by a great number of authors, have proved that when the internal and middle membranes of an artery are separated, and we inject water or air into the vessel, the external membrane swells in such a manner as to form a small aneurismal sac: so that when

the internal and middle coats are destroyed, the cellular membrane sustains the whole lateral pressure of the blood, and when the resistance is overcome, it becomes distended, and expands in such a manner as to constitute a sac in which the blood accumulates. In the mean time, the distention continually making progress, the cellular membrane opens of itself, and the sheath of the vessel arrests in its turn the effusion of blood; finally, when the sheath has also yielded, the surrounding parts, whatever be their texture, concur to the formation of the sac. The internal inflammation, the first source of all the phenomena, is communicated successively to all the surrounding parts; rendering them thicker and more fragile, and effects an adhesion in consequence of the lymphatic matter which it produces. Such is the mode in which the sac is formed in cases of ulceration of the arterial coats.

It happens that the sac is produced in a somewhat different manner. The calcarious plates of which we have so often spoken, tear and cut after a certain manner, in some cases, the internal layers of the aorta: from which results a cleft, or narrow separation, in which the blood is infiltrated, to afterwards raise the cellular membrane, and form a true cyst. In a case of this kind, M. Laennec has seen the cellular coat separated from the others, or, more properly speaking, *dissected* to a great extent, from the origin of the descending aorta, to the origin of the primitive iliacs, the external coat was dissevered from the fibrinous, in such a manner that at first sight one would have been led to believe that the canal of the aorta had been divided by a central partition. This very

singular case of dissected aneurism of the aorta is the only one with which we are acquainted.* We have only found infiltrations circumscribing ulcers of the aorta, or surrounding clefts produced in the manner above mentioned. At the opening of the body of George II., king of England, Nicholls observed a similar accident. The aorta presented a transverse fissure, about an inch and a half long, through which a little blood had quite recently passed under the external coat, and formed an elevated ecchymosis.† M. Hodgson has also made the same observation. It is in general in the transverse direction that the coats of the aorta are destroyed: it may, nevertheless, be longitudinal or circular.

The cases in which aneurism has been produced in the mode described, have been very numerous. We may consult, in this respect, the researches of Lancisi, Guatani, Morgagni, Desault, Warner, Scarpa, Home, Hodgson, &c.

4. *Of Mixed Aneurism.*

Pathologists understand by this term an affection which consists in a dilatation of the arterial parietes, followed by rupture, and *epanchement* or effusion of a certain quantity of blood beneath the cellular membrane, which it distends to the form of a sac. As its name indicates, it is a combination of the *true* and *false* aneurism of authors. A great number of aneurismal tumours are formed in the following manner: The parietes begin to undergo a dilatation, in which all

* Auscult. Med. tome II. p. 411.

† Philosophical Transactions, &c. vol. LII. p. 269.

the coats participate: but, after a certain time, the internal and middle coats open, and the external, which is the most extensible, is alone concerned in the formation of the sac.* We have never had occasion to notice the variety of aneurism, observed by Haller, MM. Dubois and Dupuytren, in which the internal coat of the artery, dilated, produces a hernia through the internal and external coats, and constitutes the aneurismal sac.

Whether the sac, succeeding the destruction of the arterial parietes, has been preceded or not by their dilatation, it communicates into the cavity of the aorta by an opening narrower than its base, circumscribed by a kind of external strangulation. This disposition of parts has been perfectly described by Scarpa, and is represented with great fidelity in the plates appended to his excellent work on aneurism.

Corvisart has given out an opinion on the mode of development of aneurism, which is too valuable to be passed over. It is founded on two cases which he has collected relative to this subject. In the first, he found a tumour about the size of a nut at the anterior part of the aorta: it was formed by a fibrous cyst, the walls of which were about two lines in thickness, and contained a substance less consistent than tallow, and of a deep red colour, much like the coagula of blood, a long time formed, which adhere to the interior walls of aneurismal sacs. The external layers of the aorta, at the place corresponding to the cavity of the cyst, were destroyed, and the thickness of the walls were in this place, especially, infinitely less

* This is the mixed external aneurism of authors.

considerable than in any other point." Corvisart could not perceive any communication between this cyst and the cavity of the aorta; he saw only a grayish livid spot, corresponding to the base of the cyst. A tumour perfectly similar, but rather less voluminous, adhered to the aorta, below the cœliac artery. In the second case, merely quoted by the same author, *two* or *three* tumours perfectly resembling the preceding were seen on the ventral aorta; the primitive iliacs presented also each *one* or *two*. From these facts, Corvisart thinks that if the patient had lived some time longer, the tumours would have entirely eroded the walls of the artery; and that then "the blood could have passed more freely into the cavity of this cyst, suddenly transformed into a tumour of blood." This opinion, or rather this hypothesis, appears to us scarcely probable. The facts related by Corvisart seem more proper to prove one of the most happy terminations of aneurismal tumours, and in which, after the absorption of the greater part of the coagulum, the tumour is transformed into a kind of fibrous knot. Mr. Hodgson, who cites in his work the facts quoted from Corvisart, regards them as proofs of this mode of the *spontaneous* cure of aneurism, and we heartily coincide in his opinion, which he confirms by cases and observations of his own.

We have shown above how the external coat, more extensible than the others, is involved in the formation of the aneurismal sac. Accordingly, it would be sufficient to prevent this formation, to deprive the aorta of its cellular coat. Nature herself has performed the same experiment. In fact, the aorta, at its commencement, strengthened by a fold of the pe-

ricardium, is deprived of the cellular coat; consequently, the destruction of the coats, at this point, is followed by a perforation and *epanchement* of blood in the pericardium, and the formation of an aneurismal sac does not occur.

In proportion as an aneurismal tumour augments in volume, it envelopes all the neighbouring parts, appropriates them to itself, and forms, by means of them, a kind of cyst. The membranes, the muscles, the bones themselves, concur to form the sac: the viscera fulfil analogous functions when the disease is situated in the thorax, or in the abdomen; and the coats which enter into their structure have been distended beyond measure, the sac opens at last into their cavity. At other times, it is not by an immoderate distention, but by the propagation of inflammation, that the aneurism breaks. However this may be, it is by rupture into the lungs, bronchia, esophagus, stomach, intestines, bladder, &c., that aneurisms become frequently fatal. It results, from all these considerations, that the volume of the aneurismal tumour depends on the nature of the parts which surround it, their greater or less extensibility, the quantity of cellular tissue which they contain, &c.* This is the reason why aneurism of the arteries of the encephalon is so extremely rare, and that a lesion capable of determining this disease in other parts, is here followed by an apoplexy more or less serious.

One of the most remarkable phenomena which generally accompanies the formation of aneurism, is the accumulation of a portion of the fibrine of the blood

* In Case XLII. the volume of the tumour equalled that of the head of a child ten years old.

in the interior of the sac. This kind of deposit, or *crystallization*, takes place in successive layers, concentrated or placed over each other, resembling, in this respect, those which enter into the composition of urinary calculi, but with this difference,—that in these the internal layers are formed first, while the contrary takes place in aneurismal coagula. The laminæ which concur to the formation of a coagulum, very nearly resemble flesh which has been discoloured by ebullition. In our thirty-sixth case, we observed in the concrete mass of blood evident traces of organization. The layers most recently deposited, macerated (so to speak) in the blood, had a grayish white colour, disseminated in patches of a bright red, formed of red vessels disposed in a plexus: the surface in immediate contact with the blood had a polished appearance, membraniform, and wrinkled, like the internal surface of the vagina; the most recent laminæ, adhering to the others only at some points, were almost floating; but the layers were augmented in density in proportion as they were examined nearer the aortic walls, and they adhered to one another by a flocculent and almost lanuginous cellular tissue: the most exterior were organized in such a manner as to form a species of fibrinous network, the aspect of which appeared very much like that of the interior of the ventricular cavities.*

It is evident that the lamellous coagulum is only formed by the successive precipitation of a portion of the fibrine of the blood. It is met with more frequently in aneurisms by *rupture* than aneurisms by

* Consult the interesting sketches of Sir Everard Home, on the organization of coagula of blood, in the Philosophical Transactions.

dilatation: nevertheless it may happen, and we have furnished examples in which no coagulum is found in the first, although they are present in the second; but, in general, true aneurisms contain simply clots of blood confusedly aggregated, and without any determinate arrangement.

We cannot explain the formation of aneurismal coagula, excepting by the stagnation of the blood in the aneurismal sac. It is demonstrated by observation, that the coagulation of this liquid takes place at all times when its course is interrupted; thence we account for the concretions met with in the cavities of the heart, in the veins and arteries, in consequence of an obstacle to the circulation.

It should appear, also, that certain concretions of blood adhering to the walls of vessels, are produced under the influence of a pathological state, probably inflammatory, of their internal membrane; but we must not suppose, with some authors, that every concretion of blood supposes the existence of a previous phlegmasia.

The thickness and volume of aneurismal coagula present great varieties: we have found them more than an inch thick, and as large as the two fists. When the coagulum exists entirely round an artery, its thickness is more considerable on the side where the aneurismal tumour is most prominent. The number of laminæ is proportionable to that thickness. M. Laennec has found some of these laminæ so compact, that they had the consistence of horn softened by strong heat.

Lastly, the layers which enter into the composition of a coagulum have not all the same dimensions.

In our thirty-sixth case, these layers formed conjoined cylinders, the most internal of which were the shortest; so that the extremities of the coagulum were thin and somewhat sharp, giving to the whole a fusiform appearance.

SECTION II.

OF THE INFLUENCE OF ANEURISMS OF THE AORTA ON THE PARTS WITH WHICH THEY ARE FOUND IN CONTACT.

The mechanical effects, physiological or pathological, which aneurismal tumours produce on the parts which surround them, vary according to a great number of circumstances, among which we should reckon their volume, nature, and position.

One of the most remarkable of these effects is, the wearing or erosion of the bones, which concur in some way to form the sac: these bones are the sternum, the clavicles, the vertebræ, and sometimes the iliac bones. A circumstance rather singular consists in this, that the fibro-cartilaginous tissues remain often untouched amid the destruction of the most deep-seated bones. Some of the old pathologists pretend, (what is entirely false,) that the blood acts chemically on the bone, by virtue of which it is dissolved: others have attributed this effect to the impulsion of the blood, and the beatings of the tumour. They, consequently, consider the destruction of the bones as a kind of erosion, produced by an action purely mechanical. Such is the opinion of MM. Corvisart

and Laennec. Hunter and Scarpa regard this kind of disease as proceeding from an absorption of the earthy matter, produced by the pressure of the sac. We are far from wishing to deny the mechanical influence of aneurismal tumours on the bones; but we think that the destruction of these parts is not a purely mechanical action; that it depends, also, at least in certain cases, on a phlegmasia of the bony texture. We have seen that the aneurismal aorta presented traces, more or less marked, of inflammation; that the tumour determined the same disease in the surrounding parts, and took, as it were, the precedency of it. But why should not the osseous texture inflame like other parts? Will it be objected, that the intervertebral, or other cartilages, are ordinarily found in a state of integrity? We shall reply, that this phenomenon strengthens our opinion, instead of opposing it. The fibro-cartilages, in fact, protected by their pliancy and elasticity, by their almost inorganic texture, inflame with much more difficulty than the bones. Thus, in the caries of the knee, it is not rare to meet with the semilunar fibro-cartilages entirely healthy, &c. (*See the Memoir of M. Cruvelheir, inserted in the Arch. Gener. de Med.*)

If the caries of bones were an effect purely mechanical, how can we explain why tumours very voluminous, accompanied with enormous beatings, do not determine any alteration of the bones, whilst the contrary takes place in aneurisms of the smallest size? This very remarkable phenomenon may easily be conceived, on the contrary, in admitting that inflammation plays a very active part in the change to which we have alluded.

In some cases the aneurismal tumours do not produce an erosion of the bones, but a wasting and atrophy of them, while in other cases they heave up, displace or disarticulate them. Thus, Corvisart has reported a case in which the clavicle had not been worn, but luxated, by the pressure of the tumour, at its sternal extremity.

Mr. Hodgson says, that, in cases where the periosteum concurs to the formation of the aneurismal sac, its vessels continue to secrete an earthy matter, which has sometimes been so abundant as to envelop a considerable part of the tumour.

Aneurismal tumours do not confine their destructive effects to the bones with which they are in contact. When the alteration of these is completed, they distend the subjacent parts: the integuments, for example, become inflamed, and they protrude through the ulcerations which they have occasioned. Such is the mode in which frightful hemorrhages supervene, which terminate so frequently the lives of aneurismal subjects. It is not always in consequence of the rupture of the aneurismal sac, externally, that death happens: this rupture may take place in very different parts, according to the seat of the aneurism. M. Laennec reports a case, in which an aneurismal tumour burst into the cells of the lungs. Frequently the aneurism of the ascending aorta, or of the curvature, compresses the trachea, or one of the bronchiæ, flattens or deforms them, determines an ulceration and perforation, and finally opens into them, producing suddenly fatal hæmoptysis. We may add to the cases of authors relative to this accident, our thirty-ninth. We have seen, but less frequently, the

aneurismal tumour make its way through a perforation of the esophagus. When this happens, of which our fortieth case furnishes a remarkable example, the patients perish while in the act of vomiting blood.

At other times the aneurism ruptures at the origin of the aorta, and determines a fatal *epanchement* into the pericardium.

We have seen aneurisms of the aorta open into the pulmonary artery. MM. Payen and Zinck presented to the Society of the Faculty of Medicine an example of this kind: Dr. Wells has reported one in the Transactions of the Medical and Chirurgical Society of London.

The posterior mediastinum, the cavity of the pleura, especially the left, are the situations in which aneurisms of the thoracic aorta most frequently open.

M. Laennec thinks that aneurisms, after having completely destroyed the bodies of the vertebræ, may burst into the vertebral canal.

The same author has seen an aneurism of the descending aorta, which had compressed and destroyed the thoracic canal, and produced a swelling of all the lacteal vessels.

We have several times seen aneurismal tumours exercise a good deal of compression on the vena cava, descendens or ascendens: it may happen, that the aneurismal tumour forces a passage into that vein, and produces what is called a varicose aneurism of the vena cava, analagous to those of the veins at the bend of the arm, or ham of the leg, &c. We are acquainted with a case, in which the pressure upon a group of aneurismal tumours of the curvature of the aorta, determines a compression of the vena cava su-

perior; so that several attacks of apoplexy have resulted from it, and an œdematous swelling of the face. Corvisart mentions an analogous fact.

Whatever may be the seat of aneurismal tumours, it is evident that one of their inevitable effects consists in a more or less considerable compression of surrounding organs. In the chest, the lungs, the bronchiæ, the œsophagus, the large vessels are the organs on which this compression is expended. In the abdomen the organs are more mobile, and for the most part less important, and therefore retreat before the tumour, and suffer little from its mechanical action. When the tumour is developed towards the origin of the cœliac artery, or below it, it is arrested, for the most part, in its progress by the pillars of the diaphragm, which concur to form the cyst, and furnish it with a muscular covering, an example of which has already been spoken of.

We may readily conceive how aneurisms of the ventral aorta may occur amid several viscera of the abdomen; as, the intestines, the bladder, &c. Their compression on the nerves, and vessels, in their course, may also become the source of particular phenomena.

An effect still more remarkable of aneurisms of the aorta, is, an obliteration of an adjacent artery by the pressure produced on it. Sir Astley Cooper and Mr. Hodgson have seen, the one the common carotid, the other the left subclavian obliterated in this manner.

SECTION III.

OF THE SIGNS AND DIAGNOSIS OF ANEURISM OF THE AORTA.

Vesalius is the first who has recognised, on the living, the existence of an aneurism of the aorta: he announced this disease in an individual having a pulsatile tumour near the vertebræ of the back. This diagnosis, truly audacious for the time, in which Vesalius lived, was not regarded as certain by the other physicians who saw the patient, until after the opening of the body showed them the aorta dilated nearly to the size of an ostrich egg—*Ut ovi struthiocameli magnitudinem fere acquaret.* Fernel had also given, as a sign of aneurism of the internal arteries, a violent pulsation (*vehemens pulsatio;*) but, as Morgagni has remarked, besides that it is only on the part of Fernel a simple conjecture, every pulsation, although very violent, does not depend upon an aneurism. Also, the celebrated Baillou, as he avows with noble candour, could not recognise, on a certain Jean Formagee, the existence of an aneurism of the aorta, until after having opened his body: and, nevertheless, this Formagee had presented, during his life, very violent pulsations in the hypochondrium; since Baillou says, that he did not recollect of ever having examined a hypochondrium where the pulsations could be so forcibly felt: *Nunquam memoria sua tam alte palpitans, pulsansque hypochondrium contigerat.*

If you take a survey of other authors who have written on the diagnosis of aneurism of the aorta, you

will see that they have never been able to distinguish the disease, excepting in those cases in which a more or less prominent tumour was perceptible at the exterior of the body; and you will find, indeed, many cases, in which the disease was not in the least suspected during life, and some in which it was not even recognised after death, of which the work of Senac furnishes a rare example.*

Lastly, notwithstanding the bright light spread in these latter days on the signs of diseases of the heart and lungs, the diagnosis of aneurism of the aorta remains yet shrouded in obscurity. The cases we have related, and the researches which we have ourselves made, may perhaps contribute to dissipate the rest of the obscurity with which medicine is troubled.

We might distinguish the signs of aneurism of the aorta into such as are idiopathic or proper, and such as are sympathetic or remote. The first are the most important to ensure the diagnosis.

According to Corvisart, whose profound sagacity no one can deny, the diagnosis of aneurisms of the aorta are always somewhat obscure, when the dilatation is not observable externally, whilst it becomes evident when the tumour presents itself to the eye and to the touch of the practitioner. But the symptoms which lead us to recognise an aneurism of the aorta, prominent externally, are, the tumour itself, and the pulsations isochronous with those of the pulse, pulsations of expansion and elevation, which we should not confound with those which accompany pure and simple aortitis, or which are produced by *simulating*

* De la Structure du Cœur, tome II. page 339, et scriv.

aneurism. It is the sign already mentioned by Vesalius and Fernel.

Let us examine, in the mean time, the signs which Corvisart regards as the most proper to make us suspect, or even acknowledge, the existence of aneurisms, which are not as yet sensible to the sight, nor the touch. The following are the symptoms:—

1. A peculiar stridulous sound when the patient speaks or respires. At first, this symptom exists only in proportion as the tumour is so placed as to compress the trachea or the bronchiæ; it is, therefore, purely accidental: afterwards it may be produced, as Corvisart has cited the example, by other lesions than aneurism of the aorta.*

2. A jarring tremor sensible to the hand, found above the situation of the heart, while the pulsations of this organ are observed in its accustomed place. We think that this symptom merits serious consideration; it was very observable in the patient of our thirty-eighth case: but it appears that it is not constant, since M. Laennec had never met with it except in cases where the tumour was already visible externally; and we do not find it noticed in the cases observed by authors, nor even in many of our own.

3. The obscurity of sound, which the superior and middle parts of the chest give on percussion. But how many other diseases may produce the same phe-

* Some individuals affected with aneurism of the curvature of the aorta, complain of a dragging sensation of the larynx; the voice becomes hoarse, or even entirely extinguished. Cannot these phenomena be explained by the pulling which the tumour produces on the recurrent nerve, which we know passes round the arch of the aorta?

nomenon! and in how many aneurismal dilatations of the aorta, on the contrary, does not the chest resound, as well as in the region of the sternum?

4. The smallness and irregularity of the pulse; and sometimes its inequality in both arms. However, these phenomena are by no means constant; a multitude of other disorders, different from aneurism, may produce them; such as a morbid state of the orifices of the heart, and ossification of the arteries, which arise from the arch of the aorta, &c.

All these symptoms cannot then be counted among the number of signs, in some measure pathognomonic, of aneurism of the aorta, to use the expression of Corvisart. In according, indeed, all the importance which has been attached to them, is it not evident that they would only serve to make known aneurism of the ascending portion of the aorta, and that they would be of no value in the diagnosis of aneurisms of the descending thoracic aorta, and especially the abdominal aorta?

The result of the discussion in which we have been engaged is, that at the period when Corvisart wrote, there did not exist any sure method of ascertaining aneurism of the aorta, unless it were in cases where the swelling could be felt externally,—cases which are confined to aneurisms of the ventral aorta, and to the small number of those of the ascending aorta, which, after having elevated or destroyed the sternum, the cartilages of the ribs, and the clavicles, form a more or less prominent tumour: even in these circumstances we might be deceived, as M. Laennec has shown in an example. (*De l'Auscult. Med. tome II. p.* 437.) We could cite many examples of simi-

lar mistakes. The symptoms indicated by Corvisart ought not to be neglected; we think, on the contrary, that, connected with those furnished by auscultation, they will give to diagnosis the most complete certainty.*

We have seen that Corvisart regarded the diagnosis as perfectly easy, when the tumour projected exteriorly, and was sensible to the eye or the touch. Certainly we cannot give to these senses such a degree of delicate tact, that we should be able to ascertain an aneurism, when it is hidden more or less profoundly in the interior of the abdominal cavities; but there is another sense, which may take the place to a certain degree of sight, and immediate touch: we mean the ear, either alone or by the aid of the stethoscope; and we are assured, that by means of this instrument, the diagnosis of aneurisms of the aorta will no longer present more difficulty, than that of the diseases of the heart, or the lungs. M. Laennec, in his work on mediate auscultation, expresses himself thus, in speaking of that ingenious mode of exploration: "I am not as yet satisfied to what extent auscultation mediate may serve to establish the diagnosis of aneurism of the aorta: I have met with few of them since the commencement of my researches. Some of these facts give the hope, and even the surety, that, in many cases at least, the cylinder will make known the disease before it has produced any serious local or general symptom: others, on the contrary, prove that a

* The terebrating pains of the back and loins, the pains, of whatever nature, which sometimes accompany aneurism, are symptoms too equivocal, and not sufficiently constant, to entitle them to be considered pathognomonic.

very *voluminous aneurism* of the thoracic aorta may exist, without the possibility of its being ascertained by auscultation, especially if we have not, in other respects, some reason to suspect its existence." Our cases thirty-seventh and thirty-eighth, in which we have recognised aneurism of the aorta, before it had formed a tumour externally, has forced us, in some measure, to advocate the use of auscultation, in opposition to the celebrated inventor himself. In other respects, perhaps, it will not be impossible to conciliate our opinions. M. Laennec allows that the only characteristic sign, truly pathognomonic, of aneurism of the aorta, consists in the simple pulsations, ascertained by auscultation, in the region corresponding to the aneurismal tumour. By means of this sign, M. Laennec discovered two aneurisms of the abdominal aorta, the diagnosis of which would have been very uncertain by the mere application of the hand." It is by virtue of this sign, that the same physician ascertained two cases of dilatation of the ascending aorta. Finally, it is also by means of this same sign that we ourselves recognised the aneurism of the substernal aorta, with which the subjects in cases thirty-seventh and thirty-eighth were affected. What can we object to these facts? As it is, properly speaking, physically impossible that the pulsations spoken of should not exist in all the cases of the same kind, we should think ourselves justified in concluding that, by means of an exploration sufficiently attentive, the diagnosis will be always strictly possible.

It is true, M. Laennec relates that it has happened to him three times since he has made use of the cylinder, to overlook aneurisms of the substernal aorta;

but we remark, that in all these cases, the cylinder, as M. Laennec has taken care to observe, had not been applied to the sternum. These facts, far from militating against the signs furnished by auscultation, make them appear to still greater advantage, while they at the same time demonstrate the uncertainty of all the others; because, we do not doubt that M. Laennec would have perceived aneurism in the three cases in question, if he had applied the cylinder upon the sternum, while all the other means of exploration were not sufficient to enable this excellent observer to ascertain the disease.

Whoever duly considers the facts and arguments we have advanced on this subject, will agree with us that auscultation offers an exceedingly valuable method of exploring aneurisms of the aorta. But the simple pulsations produced by the tumour, and which reveal the existence of it, require that we should study them at present in some detail.

When an aneurism occupies the substernal aorta, the pulsations are heard under the sternum, and under the cartilages of the ribs, in an extent more or less considerable, according to the volume of the tumour. We shall hear the pulsations so much the more readily, as the bony parts with which the tumour is in contact transmit, with remarkable intensity, the vibratory sounds. This circumstance, so favourable to their transmission, had, without doubt, escaped the attention of M. Laennec, when he said, that aneurisms of the thoracic aorta, although very large, might exist without our being able to ascertain them by the cylinder;* while the same method

* Ouv. cit. tome II. page 438.

would enable us to ascertain, with the greatest facility, aneurisms of the abdominal aorta, less favourably situated than those of the substernal aorta, not in consequence of the impulsion, but of the sound the tumour communicated.

Aneurisms of the descending thoracic aorta, and especially those which erode the vertebral column, manifest their existence by simple pulsations corresponding to the corroded vertebræ; a sign so much the more certain, as the fact has been well observed by Laennec, that the double contractions of the heart are very rarely heard in the back.

Lastly, enormous beatings which hurt the ear, accompanied with an intensity of which the hand can give no idea, not even when it feels them distinctly," existing in the region of the abdominal aorta, indicate the existence of an aneurism of that artery.

It is important to know how to distinguish the pulsations we have been speaking of from every other pulsation; for unless we are able so to do, the diagnosis of aneurisms of the aorta will fall into that obscurity from which we are so desirous to rescue it. In the cases where aneurism occupies the substernal aorta, the beating pulsations with which it is accompanied might be taken for those of the ventricles of the heart; but the pulsations produced by the aneurismal tumour differ from those of the heart, by the intensity of the noise which accompanies them, which is so shrill, in some cases, as to affect the ear. As the pulsations of the aorta, by a kind of reverberation, may be heard at points more or less remote, and especially in the precordial region, and as they are sometimes complicated by a kind of bellows sound.

we may believe in the existence of a contraction of the arterial orifices of the heart. Nevertheless, we shall readily avoid this error, in considering that these pulsations are much stronger in the region corresponding to the aneurism, than any where else. Pulsations of the aorta, in reality, exist with characters so determinate, that it appears to us that it would be difficult to mistake them when they have been once heard. But we must acknowledge that these varieties of character are very difficult to describe, and impossible to express; and that the ear alone, by a kind of medical tact peculiar to it, is capable of properly perceiving and *analyzing* them. We have already said, that very powerful pulsations are sometimes observed in the abdominal region, although the aorta be not the seat of any aneurismal tumour. That these pulsations may be the result of an inflammation, or spasm of the aorta, or may be nothing more than the natural pulsations of that artery, transmitted with a kind of reaction by some abdominal tumour. We may distinguish these from the pulsations truly aneurismal, by the circumstance of the sound being much less strong, the impulse less extensive; whilst we can ascertain, by means of the cylinder, that the aorta has neither changed in form or dimension. The bellows sound which may accompany them, seems to us a character much more equivocal than the preceding.

But in the mean time how can we explain the violence of the beatings of an aneurismal artery? It should seem that the vessel, in dilating, ought to lose some portion of the vigour of its action. We can seldom give a satisfactory account of the phenomenon,

except in admitting, as we think we have proved, that the aneurism of the aorta is constantly accompanied with an inflammatory state of the walls of the vessel, which augments the energy of its pulsations. It may also happen, that the sound which naturally accompanies the motion of the aorta, undergoes a kind of resonance in the aneurismal cavity, more or less extensive, in the same manner as the voice resounds in tubercular cavities, so as to produce the phenomenon of pectoriloquy: whatever other explanation may be given of the pulsations of aneurismal tumours of the aorta, their existence is what it is most important for us to confirm, and what we hope we have done.

It remains for us at present to take a rapid survey of the sympathetic and accidental symptoms of aneurism of the aorta; that is to say, of those produced by the influence of this disease on the other organs. We shall say but little on this point, the symptoms of which are in their nature very inconsistent, and of little use in diagnosis.

Respecting the subject which here occupies us, we may say, there are few diseases more insidious than aneurism of the aorta: in many cases, in fact, the first notice of its existence is a frightful death, as sudden as that given by a pistol shot. It is in consequence of a rupture of an aneurismal tumour, that certain individuals perish whom we thought to be in the most perfect state of health, and who never complained of the slightest indisposition.

Among the symptoms which we shall examine here, should be arranged those pointed out by Corvisart, and which announce the compression or alte-

ration of the surrounding organs; such as stridulous voice, difficulty of speech, smallness and irregularity of the pulse, unequal in the two arms. To these symptoms we might add swooning, fainting and giddiness; and when the tumour becomes a considerable obstacle to the veinous circulation in general, or to that of the brain in particular, apoplectic congestions, serous infiltration, more or less considerable, dyspnœa, &c. Some patients, as M. Laennec has observed, complain also of nausea and hiccough.

Lastly, we shall conclude by recalling some of the phenomena, which are less symptoms and signs of aneurism of the aorta, than accidents which may occur in this disease. Thus, when the tumour comes to open in the bronchia or trachea, the patients perish of hæmoptysis, more or less profuse. The patient observed by M. Laennec, in whom an aneurism had opened into the substance of the lungs, complained of a species of ebullition at the top of the lung: thus, the patient in our fortieth case, in whom the tumour broke into the œsophagus, died in consequence of vomiting of blood: thus, the patient in the forty-second case, was affected, before his last moments, with a paraplegia, in consequence of an interruption to the course of the blood, in the abdominal aorta. Peculiar phenomena are also observed when the tumour opens into the bladder, the intestines, the vertebral canal, the vena cava, the pulmonary artery, &c.

Rupture of an aneurismal tumour of the aorta is a terrible and often inevitable accident, ordinarily produced in consequence of an ulceration of the circulation: hence the reason why it happens from an in-

tense moral affection, or any considerable effort. An attendant of the Amphitheatre at La Charite, who apparently enjoyed perfect health, died in the arms of his mistress, during the act of coition. On opening the body, we found an aneurism of the aorta, with rupture of the parietes.

It is scarcely necessary to observe, that the symptoms of such an accident are paleness of the face, coldness, faintness; in short, all those symptoms which characterize formidable hæmorrhage.*

SECTION IV.

OF THE TREATMENT OF ANEURISM OF THE AORTA, AND ITS MODE OF CURE.

A. From what we have said respecting the nature of this disease, it is evident that it requires the same therapeutic means as aortitis itself. Also observe, a circumstance quite remarkable, that the most celebrated treatment, which has been proposed against this disease, the true nature of which was not then known, is precisely the antiphlogistic method in all its force. It will be perceived that we refer to the method of Valsalva and Albertini. The treatment of Valsalva and Albertini, consists in weakening the pa-

* The causes of aneurism of the aorta being almost absolutely the same as those of inflammation of that artery, we shall not stop to enumerate them here. We shall refer to what we have already said. We would merely remark, that all the professions which require great exertions, all violent passions in which the motion of the blood acquires an excess of velocity, ought to be ranked among the most powerful causes of aneurisms of the aorta.

tients by diet and repeated bleedings, to such a point that they can scarcely draw their arms out of bed. Besides, that this method is so well adapted to the proper character of the disease, it has here another advantage; namely, of diminishing the impulsion of the blood against the aneurismal sac, and of favouring, in its interior, the formation of the lamellated coagulum, without the resistance of which the artery would break much more readily.

Valsalva and Albertini, according to Morgagni, have obtained the cure of a great many aneurisms as well internal as external, by the rigorous employment of the treatment which bears their name. Morgagni, himself, Lancisi, Guattani, Sabatier, MM. Pelletan, Corvisart, Hodgson, Laennec, &c., recommend this method, and adduce facts in its support. We participate their opinion on this point, but avow, that if it is clearly demonstrated, that it has been followed by the most flattering success in the treatment of external aneurisms, it has not been so rigorously proved that it has succeeded more frequently in that of aneurisms of the aorta well ascertained to be such, and we think that the most of the cases reported by authors, are examples of the cure of pure and simple aortitis or simulating aneurisms.

Mr. Hodgson recommends that the bleeding be not carried so far as to produce fainting; for, says he, the blood then accumulates in the aneurismal sac, and forms an obstacle to the circulation at the moment when the heart resumes its functions. He says that he has seen, in similar circumstances, faintings endure so long as to excite intense alarm. Morgagni assures us that he has seen them followed by death. To pre-

vent such a formidable accident, we ought to bleed moderately, repeat it frequently, and allow the blood to flow by a small opening in the vein, or, what is better, not to apply the ligature to the superior part of the limb, according to the mode of M. Pelletan, which permits the blood to dribble slowly away.

Perhaps we might associate, with advantage, local bleedings with bleedings by the lancet: this is at least, what we are authorized to conclude from the cases we have adduced in the preceding chapter, in reference to the treatment.

The most absolute repose of both body and mind is necessary to favour the process of the debilitating treatment. The diet ought to be extremely sparing. It will be necesary to imitate the conduct of Valsalva, who had been accustomed, says Morgagni, after having taken the necessary quantity of blood, to diminish every day the aliments and drinks, until he had given only half a pound of the first in the forenoon, and a quarter of a pound in the evening, and nothing but water for drink, not exceeding a certain quantity of this liquid. After having sufficiently reduced his patient in such a manner as that he no longer had sufficient strength to draw his hand out of bed, where he was put at the commencement of the treatment, Valsalva augmented, gradually, the quantity of the aliments until the necessary strength had returned.*

There are some other means proper to aid the effects of those already spoken of. Thus we may administer preparations of digitalis, the acids diluted in a

* See Morgagni, Epist. xvii. art. 30.

great quantity of water, and acetate of lead, from which M. Dupuytren appears to have obtained fortunate results, and which we have ourselves employed with some success. So also we may have recourse to immersion of the feet and hands in warm water, a practice recommended by Morgagni, with whom it succeeded, in the case of the Marquis de Palluci, the history of which he has related with so much care. This method, undoubtedly, has a feeble and altogether temporary efficacy, but we might employ it with advantage during the paroxysms of dyspnœa, which sometimes accompany the disease. We might also allow the patient some spoonfuls of sedative or anodyne julep.

13. Whatever may have been the agents employed in the treatment of aneurism of the aorta, it is evident that none of them are able, by a direct influence, to remove the aneurismal tumour, and that nature alone can produce such a result. It is a curious subject of inquiry, to ascertain in what manner such a process is conducted. But here is the point where it becomes difficult to follow nature, and assert the facts of the healing power. We have never had an opportunity to examine the aorta after such a cure; but it is probable that aneurism of this artery is cured by a series of changes which resemble those, which happen to external aneurismal tumours, in the same circumstances.

We have seen in what precedes that one of the circumstances, which, in general, accompany the first period of aneurism, is the formation of a lamellous clot in its cavity. It appears that this deposition performs an important part in the process by which

the disease arrives at a cure, which we call spontaneous. In proportion as the fibrinous lamellæ accumulate in the sac, its cavity diminishes, and its resistance to the lateral pressure of the blood augments. Lastly, the moment arrives when the mass of coagulum is such that it interdicts all communication between the cavity which contains it, and the artery with which this cavity primitively communicates. At this period the sac, strengthened by the presence of the fibrinous layers interwoven with it, is no longer threatened with rupture, and nature can apply herself, without danger, to the work of absorption, the result of which is a gradual diminution of the coagulum, and subsequent contraction of the aneurismal sac. What we have said here concerning the mode, according to which the spontaneous cure of aneurism of the aorta is effected, reposes not only on analogous data, obtained from an observation of what takes place in the progress of certain external aneurisms, but also on the direct examination of the state in which the aorta is found in some aneurismal subjects. We have seen that in the patient of the thirty-sixth case, the coagulum was disposed in the form of a perfect cylinder, partly organized, which diminished the cavity of the aneurismal sac, and across which the blood flowed. In a man who had presented, before death, some symptoms of aneurism of the aorta, M. G. Young discovered that an aneurism had existed at the anterior part of the curvature of the aorta. "The tumour," says he, "proceeded from a circumscribed opening in the aorta, having about nine lines in diameter; it was easy to be perceived, from the absence of the coats of the vessel in that extent. The

sac, reduced then to the volume of a small orange, was filled with a lamellous coagulum the most consistent I ever have met with, which, evidently, appeared to have been amassed at a remote period. The sac was almost entirely filled with that fleshy mass, so that it would have been impossible to have opened it in any direction whatever. This coagulum did not extend into the cavity of the aorta, so as to obliterate it, but was disposed entirely around it, so that there remained a small opening which would have contained half a nut, and which allowed the blood to flow freely into the arteria innominata which arose from the inferior and posterior portion of the sac."

A woman had died with symptoms of aneurism of the aorta: at the opening of the body, we discovered an aneurism of the aorta, about the size of a small apple; the interior of which contained solid but very distinct layers of coagulum, of a white appearance, and more fleshy than in recent cases. The opening, by which the aorta had formerly communicated with the sac, was obliterated by the base of the coagulum. This did not extend, however, into the cavity of the aorta, the caliber of which, consequently, had not participated in the curative process which had supervened in the aneurism. The work of Mr. Hodgson, from which we have extracted the two preceding cases, contains other similar ones. If we compare with these facts, the more conclusive ones, observed by Corvisart, which we have cited, when speaking of the formation of aneurisms, we shall be convinced that this disease, even when it affects the

aorta, is susceptible of a spontaneous cure, in the manner we have pointed out.

The process by which the spontaneous cure of aneurism of the aorta takes place, differs, however, from that which we observe in the cure of aneurism of arteries of the second and third order. In fact, although the canal of the aorta is never completely obliterated by the accumulation of the coagulum, the contrary is ordinarily observed in the arteries of the second and third order. Nevertheless, it also sometimes happens that these arteries retain the free passage of their canals, and that the cavity of the aneurism, with which they have been affected, is alone obliterated, as we shall presently describe, takes place in the aorta. On this subject we may consult the cases recorded by Petit, Desault, Baillie, Scarpa, Hodgson, Jones, Farre, &c.

All the preceding considerations apply particularly to the spontaneous cure of aneurism by rupture of the walls of the aorta. As to aneurism, properly speaking, or aneurism by dilatation, we are ignorant if nature or art have ever been able to effect a cure. It appears to us difficult, not to say impossible, that a cure can ever take place in the case where the tumour has acquired a very considerable volume, such as to equal, for example, the fist, or even the head of a fœtus; examples of which we have related.

We shall not terminate this article without noticing the analogy which exists between the cure of aneurism of the aorta, such as we have described it, and the cure of a wound made either in an artery, or in a vein. In fact, from the researches of many mo-

dern authors, and from what we have ourselves observed, it is also by the organization of the fibrinous part of the blood, which has diffused itself round the wound, at least in some cases that the cure of the wound is effected. This analogy is another inducement for us to consider the ulcerated state of the arterial coats, as the principal and essential disease; and the tumour called *aneurismal,* as an accident purely symptomatic, which nature employs in a most admirable manner to cure, though rarely, indeed, the primitive disease of the artery. And we shall repeat that the word aneurism, employed in this case, ought to be rejected, and devoted expressly to denote the dilatation of arteries.*

* We do not speak of the surgical treatment of aneurisms of the aorta, which is most efficacious in cases of external aneurisms. We are not ignorant, nevertheless, that the ligature of the aorta has been practised in England, by the celebrated Astley Cooper. No one applauds more than us the efforts which surgeons have made to extend the bounds of their art; but we should not advise ordinary practitioners to undertake the daring and brilliant operation of the illustrious surgeon of London.

CHAPTER III.

OF CONTRACTION AND OBLITERATION OF THE AORTA.

SCIENCE, as yet, professes very few cases in relation to the contraction and, more or less complete, obliteration of the aorta. It is true that many authors speak, not unfrequently, of contractions of the aorta at its origin, especially when they do not meet with any other lesion, which can explain the dilatation of the heart which they have met with. But nothing seems to us less certain than the frequency of such contractions, considered as the cause of aneurism of the heart. In fact, out of about two hundred cases of these diseases, which we have under examination, we do not find a single one in which it is clearly demonstrated that aneurism has been produced by such a cause. We do not deny that such a case may, now and then, occur, but we think it is a much more rare complaint, than is generally imagined.

We have already said, elsewhere, that we knew a case in which the abdominal aorta was almost entirely obliterated by the enormous ossifications of its walls; we shall proceed to relate some other cases of the same kind.

Case XLIII.

A young man, fourteen years of age, subject to a violent palpitation, and considerable oppression, died. At the opening of his body, we found the heart double its natural size; the curvature of the aorta of a caliber of nearly four inches; the arteries, arising from the arch, were considerably dilated, in such a manner, that the left subclavian seemed to be the continuation of the aorta. The aorta descendens, on the contrary, was so contracted, that its caliber was only about four-fifths of an inch; and, six or seven lines below the left subclavian, it was entirely obliterated for the extent of some lines, resuming, afterwards, its natural diameter.

The superior intercostal and thoracic arteries, the mammary and inferior intercostals were dilated; the foramen ovale, which passed into the aorta immediately below its contracted portion, was not only permeable, but large enough to admit the passage of a catheter. (*Journal de Medecine*, par Corvisart, Leroux et Boyer, tome XXXIII. 1815, *Bull.* No. IV.)

Case XLIV.

An individual fifty-seven years of age, of a robust temperament, had enjoyed good health for a number of years, excepting in the winter, when he was constantly afflicted with a severe cough. In the night of the 7th of April, 1809, he was affected with cough, and difficulty of respiration greater than usual. He complained of pain under the sternum; the extremities were cold, and his anxiety was inexpressible; the

pulse weak, but regular and much altered in frequency. These symptoms continued with hardly any diminution, notwithstanding the application of cupping glasses, blisters, and volatile liniments to the sternum, until about eleven o'clock, when he died, on attempting to walk a few steps to get into bed. On opening the body, the pericardium was excessively distended; and when laying it open, a very large quantity of blood flowed out. One of the coronary veins, at the anterior surface of the right ventricle, was ruptured. At first, we thought that this might be the source of the extravasation; but, on a more attentive examination, we discovered an opening which conducted to the right ventricle, in such a manner that the rupture had begun in this part of the heart, and, having extended across its substance, had finished by taking the vein. The pulmonary artery was healthy, as well as the left side of the heart; the lungs adhered a little to the internal surface of the thoracic cavities, and each of these contained a small quantity of fluid. The finger having been introduced into the aorta, opposite the place where the arterial canal terminates, we discovered in its interior a contraction, which would scarcely admit the little finger. We ascertained, that it was owing to a thickening of the circular fibres of the vessel, as well as to a partial ossification of its coats.

This contraction of the aorta prevented the passage of the blood across the heart and the lungs; and in that extreme state of distention, the right ventricle, keeping in view its diminished power of resistance, finally burst, and produced sudden death. (*Obs. de MM. Winstone et Astley Cooper,*

inseree dans la traduction de l'ouvrage de M. Hodgson, par M. Breschet.)

Case XLV.

Henri Frere, aged fourteen, was admitted to the Infirmary, the 3d of August, 1813. Two weeks previously, being exposed to cold, he was affected with a dry cough, which for eight days was accompanied with rather copious expectoration, and pain in the left side of the chest; impeding respiration, and increased by cough: the pulse beat one hundred, and was a little hard: transpiration was abundant.

The disease was regarded as pneumonia so far advanced that suppuration seemed to have supervened; bleeding, blisters, expectorants, and cathartics diminished the symptoms; the pulse continued frequent, hard, full, but always regular. 8th, he had nausea and vomiting. 27th, only complained of palpitations. 6th October, left the hospital as cured: nevertheless the boy entered the hospital the 13th of November following, presenting very remarkable vibrations of the carotid and subclavian arteries; had been always subject to palpitations and dyspnœa. The pain in the left side had reappeared soon after the patient left the hospital, and gradually augmented. The pulse became regular, and beat eighty-eight a minute. A blister procured him some relief.

The symptoms had diminished for a time, under the employment of rubefacients and cathartics; but the pain in the left side of the thorax returned in the evening of the 29th. A blister, repeated the next day, produced a good deal of suffering until the 2d of

December, when a sudden access of fever restored the *part* nearly to the natural state. The 3d, the fever was dissipated; a similar access, accompanied with nausea and vomiting supervened on the 12th, and yielded immediately to an emetic. The 23d; for ten days he had been affected with pains in the right side of the chest; the pulse had risen anew. (Blisters, cathartics, two bleedings.) The blood, especially after the first bleeding, appeared very buffy, the pulse was lower, and the pain removed; but the cough and the palpitations continued. The circulation revived again on the 27th, and remained depressed till death. The patient perspired frequently and freely, ceased to take nourishment, and was taken with vomiting; the urine became sabulous, the sleep was agitated, the dyspnœa and the palpitations augmented, and he died the 2d of January. The pulse was always regular, but unequal as to strength and hardness.

Inspection of the Body.—The abdominal cavity contained near a pound of serum, and the intestines were distended with gas. The pericardium was much dilated, and adhered to the left pleura costalis: it contained about an ounce of fluid, and a heart twice as large as common for a child of that age. The walls of the left ventricle were about an inch in thickness; but we did not observe any other derangement in the structure of the heart or its valves. The capacity of the cavities of this organ appeared natural; the aorta was extraordinarily dilated near its origin, and formed a kind of pouch. After having furnished the branches destined to the head and the superior extremities, it was singularly straitened: the

straightening extended as far as its union with the ductus arteriosus, after which the aorta became completely impermeable, without its coats being either diseased or thickened: we discovered only a small elevation united to the internal surface, half an inch below the straightened part. This prominence, less elevated, was nearly the diameter of a pea. As to other appearances, it might be said that the artery had been firmly compressed with a tight ligature. The obstructed portion was about one line broad: the artery, afterwards, gave off three branches about the size of a chalk line, and, lower down, three other smaller branches. Lastly, the aorta resumed the natural size along the vertebræ. These three vessels were evidently the superior branches of the inferior intercostals; their coats were very thin, and resembled those of the veins: a sound passed from the pulmonary artery along the ductus arteriosus to the obstructed portion of the aorta; but, from its apparent thickening, it did not seem probable that this canal had any communication, and the flourishing appearance during life favours this presumption. The arteria innominata, left subclavian, superior intercostal and mammary arteries were much dilated; the epigastric was of its usual size. These circumstances, and the natural caliber of the aorta, immediately below the strangulation, proves clearly that the blood, as might have been expected, was not conveyed in sufficient quantity to the inferior extremities by the anastomosing branches of the mammary and epigastric arteries, but principally by the communications of the superior intercostal and mammary arteries with the three large branches rising from the aorta below

the straightened portion, leaving out of the account the anastomosing branches of the mammary and thoracic arteries, with the intercostal and diaphragmatic. The lung had nearly its common colour, the left lobe was much compressed. We found on each side of the thorax a small quantity of bloody serum. (*Observations of Mr. Graham, published in the fifth volume of the Medico-Chirurgical Transactions.*)

Mr. John Bell, in his *Surgical Observations*, relates the following fact:—

Case XLVI.

M. Paris, prosector of the Amphitheatre of the Hotel Dieu, injected, in 1789, the body of a woman about fifty years of age, whose aorta was completely obliterated a little below its curvature. M. Paris was struck with the extraordinary dilatation of the small arteries at the anterior part of the chest. The injection introduced by an opening made in the aorta penetrated so easily, that, far from suspecting an obliteration, M. Paris was afraid he had employed too large a quantity of material. The aorta, immediately below its curvature, was reduced to the size of a writing quill: its coats were of unusual thickness, but its cavity was remarkably contracted. The curvature of the aorta, above this contraction, was but little dilated; the part situated below had not lost its natural diameter: we could discover nothing either in the peculiar texture of the vessel, or in the surrounding parts, which served to explain the contraction. The carotids were in their natural state;

the arteria innominata and the subclavian were twice their natural diameter: their smaller branches were proportionally dilated and bent zigzag. The mammary and diaphragmatic arteries, the transverse arteries of the neck, the thoracic and scapular, and all their branches were considerably enlarged and tortuous. Below the contracted part of the aorta, the inferior intercostals were triple or quadruple their natural size, and the largest were those which arose nearest the *contraction;* the inferior diaphragmatic, and epigastric arteries, were also much dilated and inosculated pretty freely, with the superior diaphragmatic and mammary.

We may readily conceive that it is impossible to trace a general history of contractions of the aorta, from the small number of facts, which science has collected on this point of pathology. What is the cause of this disease? Is it always accidental? Is it sometimes congenital? Are there any signs by means of which we can recognise, or, at most, suspect it? What influence does it exercise on the principal organs and their functions? These questions, and many others which might be added, cannot be resolved at present in a satisfactory manner. Some of the effects of the disease, however, plain reasoning, or even analogy, might lead us to foresee, if the preceding observations have not already, in part, revealed them. Thus, for example, the obstacle placed in the way of the blood, in contraction or complete obliteration of the aorta, must occasion an enlargement, and species of irritation in the vascular system situated behind it. Hence, the dilatation of the arterial trunks, which arise from the aorta; the dilatation and hyper-

trophy of the cavities of the heart, and even their rupture, as appears to have taken place in the case of Sir Astley Cooper; thence the congestions more or less violent in the encephalon, especially if it should happen that the obliteration was brought about very rapidly, instead of forming by degrees, so that nature prepares, insensibly, new channels for the blood which the aorta refuses to receive, as it happens in all cases, of the same kind, for example, in the cure of aneurisms.

We do not think there exists any mode of recognizing the disease which occupies us. We are ignorant, indeed, if the extraordinary development of the arteries, which serve for the anastomotic and collateral circulation, joined to the absence of the ordinary signs of the other obstacles to the aortic circulation, would suffice to make us suspect the existence of contraction or obliteration of the aorta, a lesion, which we suppose always to have its seat below the curvature. However it may be, one of the consequences, the most remarkable which we may draw from the preceding facts is that nature, even in these cases, in her immense resources is the means of keeping up the circulation in the parts situated below the co-action or the complete obstruction of the aorta, the principal canal, from whence the blood is distributed through all the organs. Another consequence, resulting immediately from this conclusion, is that the ligature of the aorta, such as Sir Astley Cooper has performed, would be an operation truly practicable, if there was not opposed to it any other objection, than the fear that the transmission of blood, in the inferior parts, was impossible by means of the anasto-

motic vascular system. What observation demonstrates in man, experience, on living animals, confirms. In fact the celebrated surgeon whom we have just mentioned, has frequently tied ligatures on the aorta of dogs, and the blood has not been less easily transmitted to the posterior limbs of these animals by the anastomosing branches. The same author observes, in his memoir on the ligature of the aorta, translated by M. Breschet, that there is at the Hospital of Saint-Thomas an admirable preparation, showing the aorta obliterated (on an animal,) and the numerous and dilated anastomoses, which continue the circulation.

We shall not advance any farther reflections on the disease which forms the subject of this chapter. We fear we should err by endeavouring to go beyond the facts: We should stop as soon as the light of observation ceases to guide us, or as soon as we have lost the thread of experience to guide us in our researches. We proceed to consider another kind of contraction, much more common than the preceding, of which we hope to be able to present a more complete history.

CHAPTER IV.

OF THE INDURATION AND VEGETATIONS OF THE VALVES OF THE HEART, AND CONTRACTION OF ITS DIFFERENT ORIFICES.

PRELIMINARY CONSIDERATIONS.

The physicians of the present day are well acquainted with the fact, that the orifices of the heart are surrounded by fibrous zones, to which the muscular fibres are attached, which constitute the proper texture of the heart. These fibrous rings are, properly speaking, the tendons of this muscular organ; they send prolongations to the valves, and thus communicate with the tendinous cords of the fleshy ventricular columns. All these peculiarities, observed by some ancient anatomists, have been better described by the moderns, and especially by M. Gerdy. The fibrous tissue of the orifices and valves of the heart, is invested by the internal membrane of that organ; which, according to Bichat, very nearly resembles serous membrane. We may, therefore, employ, with Corvisart, the name of fibro-serous tissue, to express the nature of the texture of which

the valves and white zones are composed, which encircle the auriculo-ventricular orifices. The tissues of this nature are distinguished from all others, by the extreme facility with which they are converted into a cartilaginous or even osseous substance, we should not be astonished, therefore, to find the valves and the valvular rings of the heart frequently the seat of fibro-cartilaginous, or even ossiform degenerations.

Although many ancient and modern anatomists have been occupied, with advantage, in the study of these transformations, it is still highly necessary that this interesting subject should be farther investigated. We regret, especially, that many of the pathologists who first made known some of the valvular lesions, have not described them more exactly, and, subjoined to their description, the history of the symptoms, which they had observed during life. Thus, in revising the authors who have frequently furnished the illustrious Senac with the very brief cases which he cites in his beautiful work, we cannot form an exact idea of these *fleshy concretions*, *glandular bodies*, and *callosities* of which he has so vaguely spoken. And, notwithstanding the rapid progress which pathological anatomy has made in our days, we have no precise idea of the nature, mode of formation, character, and signs of the indurations to which we allude.

Ossification of the valves of the heart, as well as those of the arteries, is frequently met with in a more or less perfect state, in people of advanced age; but does it follow, as the *classic authors* have pretended, that it is the effect of the pathological affection, which has been sufficiently explained in the preceding

chapters. Does it not also occur in youth, and even infancy?

We shall now proceed in our attempt to add something to what has already been said on this point of pathology. We shall commence, according to our prescribed rule; first, to present the facts, then to compare and analyze them, and, finally, compose a general history. We shall present, in succession, examples of induration, and vegetations of the right and left cavities of the heart.

ARTICLE I.

Observations on Induration and Valvular Vegetations.

SECTION I.—INDURATION OF THE VALVES.

Case XLVII.

Hardening and Thickening of the Bicuspid Valve, and of its fibrous Zone: Calcarious Concretion of the Apex of the Heart.

Josephine Wagner, aged forty-seven, cook, married at twenty, mother of two children, born in Germany, of parents who died of acute disease, suffered, for a great many years, difficulty of respiration whenever she took the least fatiguing exercise. Some time after menstruation had ceased, which took place at the age of forty-five years, she felt under the sternum an erosive pain, with heat or cold according to circumstances. At the same time a slight cough appeared. About a year afterward, the strength had

sensibly diminished, the inferior extremities and the loins became œdematous, the abdomen also was swollen, which determined the patient to enter the hospital Cochin, the 4th of December, 1805. At that time, respiration was laborious and plaintive; there was pain under the inferior portion of the sternum, weakness, cough, with mucous expectoration, emaciation, and intermittence of the pulse; which was frequent, small, depressed, presenting the third or fourth pulsation more sensibly than the rest. (*Ptis. pect. jul. id.; pot. calm.*)

The substernal pain remains, the dyspnœa augments at intervals; sometimes there is a slight cephalalgia in the evening; the cough is accompanied with rather copious expectoration of viscid matter, mixed with a kind of purulent secretion, of a cherry colour, tinged with brown; analogous to what results from a small quantity of blood diffused in the mucous substance: the pulse continues to be intermittent, and scarcely sensible.

19th, weakness greater, abdomen sensible to slight pressure, cough fatiguing, with diminished expectoration: watchfulness the night following.

20th, face depressed, eyes dull, voice almost extinct, expectoration of a deep gray fluid, thirst.

21st, nearly the same state; tongue drier, the patient complained of total loss of strength: in fact, she died about one o'clock in the morning.

Inspection of the Body.—On opening the thorax, about a wine glass full of bloody serum flowed from the left cavity; old adhesions were observed between the corresponding folds of the pleura. The mucous membrane of the bronchiæ, uniformly reddened, was

more particularly so in the divisions, which contained a purulent matter. The pulmonary parenchyma was gorged with blood, but nevertheless crepitant. Towards the union of the superior with the middle third of the left lung, on its external side, a tumour somewhat hard presented itself, about the size of a pigeon's egg, which seemed to us to have been formed by the blood effused into the texture of the organ. The pericardium contained about an ounce of serum, of a deep red colour. The heart was considerably larger than in the healthy state. This increased volume depended upon the amplitude of the auricles, which were distended by a great deal of blood, more than half coagulated, mixed with some fibrous concretions, especially in the appendix of the left auricle, where this substance was dense and almost identified with the fleshy columns. Each of the auricles was about double the natural size, without any change of thickness of their walls.

The ventricles, but little developed, offered in other respects nothing peculiar. The valves of the left auriculo-ventricular orifice, the diameter of which was rather small, were thickened, and its fibrous zone was hard and nearly twice the natural thickness. At the top of the left ventricle, in the substance of the fleshy fibres, there was a concretion of calcarious phosphate, of a rounded form, and about the size of a small nut.

The internal membrane of the aorta was red, especially in the arch, and presented several small eminences, which we might regard as the rudiments of a cartilaginous degeneration.

The stomach was healthy, and contained a small

quantity of fluid matter. The mucous membrane, in several places, was of a beautiful red colour.

The spleen adhered to the peritoneum by its convex surface; its texture was rather contracted.

The liver was large, but healthy; its vesicle contained a brown-coloured bile, thick and agglutinated.

Near the right ovary, in the thickness of the broad *ligament*, we found a cyst about the size of a pigeon's egg, filled with limpid serum.

The pia mater was infiltrated with a considerable quantity of citrine coloured serum, especially at the superior part of the brain; the lateral ventricles contained about half an ounce of the same liquid. The plexus choroides, of a pale red, contained several small serous cysts.

The brain itself was healthy, and its vessels appeared to contain but little blood.

Case XLVIII.

Ossification of the Mitral Valves, and Contraction of the Orifice to which they are attached.

Marguerite Jolivale, porter, entered the hospital Cochin the 20th of March, 1810, affected, for ten months past, with great difficulty of respiration, which augmented on the least exercise. In addition to these symptoms were the following: inability of retaining the horizontal position; pulsations of the heart soft, but very extensive; pulse scarcely perceptible on either side; sound flat throughout the whole inferior part of the chest; tension and manifest fluctuation of the abdomen; stools and urine seldom; lit-

tle appetite; skin dry and cold; within three months, infiltration of the inferior extremities; emaciation.

Debility increases daily; the patient spit blood, and died three days afterward, on the 27th of March.

Inspection of the Body.—The heart is very voluminous, and filled with blood; the mitral valves are ossified, and the orifice which they circumscribe much contracted. The corresponding auricle is very thin, and twice the natural size. The two cavities of the chest contain a pint of clear serum; the pericardium contains about twelve ounces. The lungs, in other respects healthy, are swollen with a little blood. The abdomen contains two pints of serum; the mucous membrane of the stomach is red. The other viscera are healthy.

Although this case has been so concisely described, we find in it all the most common symptoms of contraction of the orifices of the heart; such as infiltration, dyspnœa, smallness of the pulse and spitting of blood.

The following cases will throw considerable light on the diagnosis of the disease, by offering to our observation a symptom which was not known previous to the period when the method of mediate auscultation was discovered by Laennec.

Case XLIX.

Bellows Sound during the Contraction of the Auricle; Palpitations, Dyspnœa, Infiltration, &c. Fibro-cartilaginous Degeneration of the Mitral Valve, and Contraction of the left Auriculo-ventricular Orifice.

Barbe Lebant, aged sixty-three, washer-woman, large, and rather strongly constituted, having, how-

ever, a narrow elongated chest, the sternum convex above and concave below, entered the hospital Cochin the 4th of November, 1822, for a disease which she attributed to the fatigue of her occupation. She had vomited blood, she said, for more than five years. For three months, she had been troubled by the various symptoms which constitute aneurism of the heart, of authors. We observed, on attentive examination, the following phenomena: cough, with sense of constriction in the middle of the chest; orthopnœa, threatening suffocation; face violet coloured; lips swollen; beatings of the jugular veins isochronous with those of the carotid arteries; palpitation; pulse irregular, unequal, intermittent, frequent and very small, although the pulsations of the heart were very strong. The pulsations of the ventricles were irregular and intermittent; these intermissions, in general, are preceded by two quick contractions succeeding each other with a rapid but distinct impulse. The left ventricle contracts with a strong impulse and rather clear sound: the contractions of the auricles are accompanied with a rushing sound analogous to the wind of a bellows, or, what is a better comparison, the murmur of the placental throb. The hand, applied on the precordial region, feels a vibratory movement, deep but well marked: it is suddenly and strongly raised by the motion of the ventricles: the lower extremities are infiltrated.

Diagnosis.—Contraction of the left auriculo-ventricular orifice; hypertrophy and dilatation of the left ventricle. (Prescription—Ptis. aperit. oxym. scillit. jul. tinct. digit.

The following days the patient gave herself up to

the most discouraging feelings; her anxiety is extreme; the pulsations of the heart were sensibly diminished; but œdema invaded the superior extremities; the lips offered a pale violet tint; the patient could no longer enjoy a moment's sleep. The 15th of November, eleven days after entrance, although she did not appear worse than usual, she died suddenly after eating her broth. The *file sound*, indicated above, continued to the last.

Inspection of the Body, twenty-four hours after death.—Lips and face of a livid violet colour; considerable infiltration of the limbs.

Organs of Respiration and Circulation.—The heart is enormously distended with clots of blood, and three times as large as the fist of the subject. The coagula being removed, the organ itself is flabby, and about one-third larger than natural. The left ventricle is dilated, its parietes hypertrophous, and seven or eight lines in thickness towards the base. The columns attached to the mitral valves are very strong. The right ventricle, thicker than in the natural state, is not sensibly dilated; the two auricles are dilated and thickened, but the left is one-third larger than the right; the texture of the heart is firm, and of a good colour. The mitral valve, entirely deformed, is hard, thick and fibro-cartilaginous; and the left auriculo-ventricular orifice is so contracted, that it will scarcely receive the end of the little finger; it forms an annular opening, the rounded lips of which are very resisting, and have a polished surface. The tricuspid valve is transformed into a kind of band, or collar, from two to four lines broad: one only of the processes of the valve is ob-

servable; and this is converted into a small fibro-cartilaginous tubercle. The right auriculo-ventricular orifice is uncommonly large, cannot be completely closed by the valve. The aortic valves are thickened, without any sensible contraction of the orifice to which they are attached. That part of the pericardium which covers the heart offers a whitish pseudo-membranous patch, disseminated with miliary granulations, resembling venereal vegetations. The pleura is red and injected, and covered with a great many granulations analogous to the preceding. These albuminous agglomerated granules are more numerous on the pleura of the diaphragm, and are united with it in clusters. The left lung is quite crepitant; the right is distended with a sero-sanguine fluid; the mucous membrane of the bronchiæ is red.

Abdominal Organs.—The cavity of the peritoneum contains a certain quantity of citrine coloured serum. The liver, swollen with blood, descends as far as the right iliac fossa; its vesicle contains ninety calculi of a cubic form, unequal volume, and polished surface. The gastro-intestinal mucous membrane presents a red colour, which borders on violet and black in the stomach and greater part of the small intestine, and is bright and ruddy in the last convolutions of this intestine, as well as that of the colon.

Encephalic Organs.—The cavity of the arachnoid contains a considerable quantity of serum. On the surface of the right lateral ventricle appears a very small patch of a yellow colour, with infiltration of blood: the rest of the cerebral substance is somewhat soft. The sinuses, the veins which ramify over the convexity of the hemispheres, and the internal jugu-

lar veins, are swollen with black blood: the latter are at least as large as the thumb.

This patient presented, as it were, a combination of all the positive signs of hardening of the mitral valve, and contraction of the orifice which it circumscribes. These are, first, the bellows, file or rasp sound; secondly, the vibratory thrill, or purring tremor, according to M. Laennec, who has justly compared this tremor to the purring noise produced by cats when they are caressed; thirdly, the inequality, irregularity, intermittence and smallness of the pulse. It is indeed true, that the murmur of the left auricle was heard, not only in the region of the left cavities, but also under the sternum. This fact seems contradictory to the proposition of M. Laennec, according to whom the pulsations of the left cavities are heard in the region of the cartilages of the fifth, sixth, and seventh ribs, and those of the right cavities under the inferior part of the sternum. But remark, that in the case which occupies us, the tricuspid valve itself was considerably altered, while its orifice, far from being contracted, was dilated; and, farthermore, in consequence of its great size, the heart might be carried towards the right side. Lastly, this fact ought to be regarded, at present, only as an exception to the general rule proposed by M. Laennec, of which we have frequently had occasion to confirm the truth. The following cases will serve, in some measure, to favour this opinion.

Case L.

Bellows Sound, Inequality, and Irregularity of the Pulse, Infiltration, Dyspnœa, &c.—Contraction of the Auriculo-ventricular Orifice, and Fibro-cartilaginous State of the Mitral Valve, &c.

Marie Simon, aged forty-seven, seamstress, brunette, of a feeble and delicate constitution, having a very narrow chest and deformed vertebræ, entered the hospital Cochin the 21st of February, 1822. She had not been regular for five years; she had suffered long-continued domestic disappointment, and had made immoderate use of coffee. In 1813, she began to perceive that her face and hands were of a violet colour; that the lower extremities were swollen, and that she suffered, on the least exercise, palpitations and difficulty of breathing. The employment of aperients and diuretics dissipated the œdematous swelling in six weeks: some palpitation was always felt. Nevertheless, her condition was supportable until the year 1817; but, at this period, the cough, return of suffocation, and spitting of blood, obliged her to enter the Hotel Dieu. M. Recamier had some leeches and a blister applied, &c. At the end of six weeks, she left the hospital somewhat recruited. Two months afterwards she entered the Cochin hospital; and at the end of three months' treatment, she went out in tolerable health. The symptoms reappeared, nevertheless, some time after, and have never been since entirely removed; only they augmented at intervals, and occurred in paroxysms. Ten days before her last entrance to the hospital Cochin, they had as-

sumed an alarming intensity, and were complicated with pleuritic pain, and hæmoptysis, allowing the patient no intervals of relief. Her complexion was livid, and of a leaden hue; her face expressed fright and anxiety; the subcutaneous veins were prominent; many spots of livid red were observed on various parts of the skin; the legs and hands were cold, and violet coloured; the pulse was small, precipitous, unequal, irregular and intermittent, contrasting with the strong, dry, violent and tumultuous beatings of the heart: these produced an elevation of the left side of the chest, even as high as the clavicle; pain was felt in the right side; the sputa frothy, and slightly tinged with blood; the patient, threatened with suffocation on the least exertion, was, notwithstanding, in continual jactitation.

Auscultation.—The pulsations of the heart resembled a kind of tic-tac, of unequal movement, and so precipitous, that it was very difficult to analyze them; those of the left ventricle imparted to the cylinder, a strong impulse, and were moderately sonorous. We heard, in the region of the left cavities, quite a loud murmur. Mucous rattle with large bubbles in the whole anterior part of the chest; kind of suspicious snoring in the right side; respiration loud on the back part, and pectoriloquy very strong in the region of the right scapula.

Diagnosis.—Contraction of one of the orifices of the left heart, with hypertrophy; tubercles and pulmonary excavations.

Prescription.—Ptisan aperit. jul. diuret. et sed.

The following days no relief; cough continual, with rapid, precipitous, but rather feeble paroxysms, agi-

tation, giddiness, fainting, tendency to drowsiness, interrupted by anxiety at every moment; orthopnœa, eyes prominent, dull and almost staring. Soon the patient had no longer sufficient strength to sit up; the trunk of the body was inclined to the right side, the head high and thrown backward, the mouth wide open: she seemed to stifle rather than respire: lastly, speech and respiration failed her; she uttered, however, in a feeble voice, some incoherent words, said she felt she was dying, and, accordingly, expired the sixth day after entrance.

Inspection of the Body, twenty-four Hours after Death.

1. *External Appearances.*—The face and the hands have lost the livid blue tint; the violet spots, which exist in different parts of the body have disappeared; the vertebral column is deformed, the thoracic portion inclining to the right, the abdominal portion to the left, represents an elongated S, the first curvature of which considerably diminishes the cavity of the chest.

2. *Organs of Respiration and Circulation.*—Organized adhesions, fibro-cartilaginous at the superior part of the chest, cellular throughout elsewhere, uniting the parietal and visceral folds of the pleura; at the left, the fibro-cartilaginous false membrane is incrusted with large osseous plates; the left lung, about the size of a common spleen, choked up, as it were, by the surrounding organs, in the narrow cavity which it occupies, is red and yet crepitant, although it contains quite a large number of crude tubercles; the summit of the right lung, tuberculous throughout, is excavated by several caverns, one of

which is quite large: the remainder of this lung is crepitant and a little swollen. The heart and large veins are stuffed with liquid or coagulated blood; the former, twice as large as the fist of the subject, is thrust upward by the abdominal organs as far as the clavicle, and covers the whole anterior left parietes of the chest, and a portion of the right. The left ventricle is voluminous, especially considering the smallness of the subject; its walls, towards the base, are six to seven lines thick; its cavity is evidently in the natural state; the walls of the left auricle are thickened; the fleshy columns of its appendix are so large that they resemble those of the ventricles; on the internal surface of this auricle is seen a cartilaginous plate, about the size of the nail; the left auriculo-ventricular orifice is so contracted, that it resembles a fissure more than an opening; the contour of the thickened bicuspid valve forms a kind of ring, the resisting tissue of which appears white and fibro-cartilaginous, when cut, and grates under the knife. The right auricle and ventricle, distended by a large quantity of blood, are in other respects in the healthy state. The ventriculo-aortic orifice is contracted by the presence of three pisiform tubercles, fixed on the middle of the free edge of the sigmoid valves, which are nothing but the tubercles of Arantius, developed, hardened, and fibro-cartilaginous, like the mitral valve. The internal membrane of the aorta is speckled with cartilaginous laminæ.

3. *Abdominal Organs.*—These viscera, of considerable volume, are, as it were, pushed into the cavity containing them; they are also protruded deeply into the chest, so as to usurp a portion of the space

destined for the heart and the lungs. The mucous membrane of the stomach presents a deep marked red, which extending into the duodenum, the jejunum, and commencement of the ileon, loses its intensity in the remaining portion, then sinks into the cœcum, and is found throughout the large intestine. The internal membrane of the bladder, distended by a great quantity of urine, is both red and injected.

Encephalic Organs.—The arachnoid contains a certain quantity of serum; the meninges are injected; the plexus choroides contains within its substance a series of small diaphanous hydatidiform vesicles, about the size of hemp-seed.

It is impossible to imagine more horrible dyspnœa than that which afflicted the patient in the present instance. This may easily be conceived. In fact how numerous were the obstacles both to circulation and respiration! an extremely narrow chest, a part of which was compressed by the abdominal viscera; a tubercular affection of the lungs, which necessarily diminished the extent of the respiratory surface; a contraction of the left auriculo-ventricular orifice, which concurred to the same effect, by preventing the free passage of the blood to the ventricle, and consequently producing a distention of the pulmonary vessels, the right cavities, and the whole venous system! lastly, the volume of the heart itself in connexion with the preceding causes.

Case LI.

Bellows Sound; Strong, Concentrated and Heavy Contractions of the Left Ventricle—Contraction of the Left Auriculo-Ventricular Orifice—Hypertrophy of the Left Auricle and Ventricle, &c.

Eleonore Lemindre, aged 34, tailoress, of a sanguine lymphatic temperament, having suffered great depression of spirits, experienced, in the course of 1820, symptoms of what is called disease of the heart. In 1821, after a paroxysm of cough, she spit blood; menstruation had disappeared within two months; oppression, and considerable palpitation occurred on the least exercise, when she entered the Cochin hospital on the 7th of February, 1822. Her face was bloated, without being either violet or livid; the skin was cold, the abdominal limbs infiltrated; the patient suffered pain in the chest, especially in the precordial region; she respired sitting rather than lying in the bed, coughed frequently and expectorated a sero-mucous matter, mixed with streaks of blood.

Auscultation.—The cylinder applied over the left ventricular region, a very remarkable murmur is heard, analogous to the sound of a bellows; it is thrown upward by the contractions of this ventricle, which are dull, concentrated and strong, whilst the pulse is very small, but hard. The bellows sound precedes the ventricular pulsations. In the region corresponding to the right cavities, nothing particular is observed. Respiration natural throughout, except at the top of the right lung, where is heard a

dry, sonorous rale, interrupted by prolonged suspicious sounds.

Diagnosis.—Contraction of the left ventricular orifice, with hypertrophy of the corresponding ventricle; catarrh at the superior part of the right lung. (Julep; digital; aperit. oxymel scillit.) Five days after entrance, pleuritic pain supervened, which was removed by the application of twenty leeches. Repose, seconded by the measures above noticed, tranquillized the palpitations, and dissipated almost completely the œdema, when, on the 23d of February, after having eaten aliments, brought her by her parents, the patient was seized with a violent shivering and vomited several times. The 24th, erysipelas of the face, red tongue, thirst, hot skin, pulse frequent. (Diet, sweetened gum-water.) 25th and 26th, the erysipelas extends towards the neck and scalp; the eyes are completely closed by the swollen lids. 27th. The erysipelas continues to spread, acute pain in the throat, respiration embarrassed, short and precipitous. (The patient refuses, with obstinacy, the leeches.) 28th. Very considerable inflammatory swelling of the anterior region of the neck seems to strangle the patient: speech and deglutition very difficult, alternations of agitation and stupor. The patient having no longer the strength to cough or spit, thrusts her fingers continually into her throat, as if to remove the impediment to the free passage of the air. The next day, 1st of March, increased strangulation, enormous tumefaction of the neck, impending suffocation, with almost complete aphonia, determined the patient to consent to the application of leeches; but it was too late; nevertheless, thirty were applied; two

hours afterward the patient died in a state of asphyxia.

Inspection of the Body twenty-four hours after death.

A good degree of flesh still remaining, infiltration of the lower extremities. The lungs throughout are quite crepitant, and but little swollen. The mucous membrane of the bronchia and larynx is red and inflamed; the epiglottis and its ligaments are considerably thickened; the glottis presents a narrow opening, occasioned both by the inflammatory swelling, and the mucous secretions collected round its margin. The cellular tissue of the larynx, that of the face, especially the lids, is swollen, injected, and infiltrated with pus. The pericardium contains about half a glass of lemon-coloured serum; the heart is much enlarged, is filled with clots of blood; the walls of the left ventricle are full an inch thick; its capacity is sensibly diminished; the left auricle is dilated and hypertrophied; the left auriculo-ventricular orifice is reduced to a kind of ovular chink, the greatest diameter of which is not more than three lines. The mitral valve, deformed, and folded over, forms a kind of ring or elliptical collar, the dense, resisting, fibro-cartilaginous texture of which creaks under the division of the scalpel. The right ventricle is nearly in its natural state; the corresponding auricle is moderately dilated; the valves of the ventriculo pulmonary orifice are red, covered with small vegetations, and strewed with cartilaginous points; the tricuspid valve is equally red, thick, folded on itself and deformed, but without contraction of the orifice to which it is annexed. The peritoneum contains about a pint of

diaphanous citrine coloured serum. The mucous membrane of the stomach presents, especially in the pyloric region, a red colour which is prolonged into the duodenum, the jejunum, and the ileon, where it gradually terminates.

The large intestine is contracted and healthy; and so is the bladder. The cavity of the uterus contains a little blood.

We shall not multiply farther the cases of induration of the mitral valves, and of contraction of the corresponding orifice: those which we have read are sufficient to make known the principal anatomical characters of the disease, and demonstrate, sufficiently, that if the diagnosis of these organic lesions, presented formerly insurmountable difficulties, it has become of great simplicity in the present day, as, fortunately, we possess a mode of exploration, which furnish us signs easy to discriminate. We shall return, hereafter, to the subject of diagnosis, and bring together, with care, and in a single view, all the data on which it may be established. We shall proceed, in the meantime, to relate a few cases, respecting induration of the aortic valves.

II.—INDURATION OF THE SIGMOID VALVES OF THE AORTA.

Case LII.

Cartilaginous State of the Valves of the Aorta—Aneurism with Alteration of the Internal Membrane.

Boulenoy, aged 66, teacher, of a good constitution,

entered the hospital the 2nd of September, 1810, complaining, for fifteen years, of pulsations in the anterior and superior part of the sternum and dyspnœa, augmented by walking and exercise. For three months past, a tumour had begun to show itself in the situation of these pulsations; at the time of entering it was about the size of a pigeon's egg, and presented evident pulsations. The patient very meagre; the legs were œdematous, and he could only respire in the vertical posture.

He died two hours after his arrival.

Inspection of the Body.—The curvature of the aorta was much dilated, and formed a considerable tumour, which compressed the trachea: the anterior portion of this tumour, presented a large opening, resulting from the rupture of the three arterial coats: its cavity was filled with fibrine. The internal coat of the artery was ragged, and strewed with osseous particles: the descending thoracic aorta, offered the same lesions. The first and the second left ribs, and a great part of the sternum were eroded.

The aortic valves were cartilaginous.

An ulcer, with unequal edges, occupied the whole thickness of the posterior and lateral left part of the trachea, one of the rings of which was diseased. The internal membrane was red and covered with mucus.

The right lung was filled with blood, and its inferior portion was crowded with suppurating miliary tubercles.

The induration of the valves, in this case, had not yet arrived to the cartilaginous consistence: we shall find it more advanced in the following, and of an ossiform nature.

Case LIII.

Ossification of the Aortic Valves.

Marie-Charlotte, aged 53, working-woman, strongly constituted, had not menstruated since her 38th year. For seven years past, she had experienced great difficulty of respiration, augmented by walking and other exercises. Two months before she entered the Cochin hospital, which took place on the 28th of June, 1809, she was affected about the region of the heart with violent, tumultuous, and embarrassed pulsations; frequently started from sleep; the pulse became insensible in both wrists, a sensation of embarrassment about the attachments of the diaphragm; the chest returned a flat sound; the inferior extremities were infiltrated, the abdomen fluctuating, and the horizontal position was impossible. These symptoms augmented every day, the superior extremities became infiltrated, the whole constitution became cold, pulsations were perceived in the jugular veins; the lips were slightly injected, the face bloated, pale, and expressive of fatigue; the dyspnœa such, especially in the evening and night, that the patient is obliged to leave her bed, and remain in an arm chair; she spit blood for three days; lastly, insomnia is continual, infiltration enormous, notwithstanding the use of aperients; the anxiety became extreme, and the patient sunk, after an agony of short duration, on the 26th of July.

Inspection of the Body.—The heart is much more voluminous than in the natural state. The walls of the left ventricle are about one-third thicker than in

the healthy state. The three aortic valves are ossified; the right valve, especially, which presents an ossification about the size of a pigeon's egg, contracting the ventriculo-aortic orifice, to such a degree that the little finger cannot be passed into it.

The lungs are healthy. The right cavity of the chest contains about a pint of serum, and the left about half a pint.

The pericardium much distended, contains twenty ounces of a similar fluid, a little turbid.

You will perceive, in this case, an example of osseous concretion so considerable, that few similar ones are to be found. The symptoms which accompanied the disease, are absolutely the same as in the preceding cases, dyspnœa, infiltration, anxiety, beating of the jugular veins, &c.

III.—INDURATION OF THE TRICUSPID VALVE AND THOSE OF THE PULMONARY ARTERY.

Case LIV.

Cartilaginous State of the Tricuspid and Bicuspid Valves, with Contraction of the Orifices to which they are attached.

Germaine Mesnier, aged 30, had enjoyed, in her infancy, pretty good health, excepting that she had always had a short breath. Having menstruated at seventeen years of age, she had begun, two years previously, to be affected with palpitation. The pulsations of the heart increased on the approach of the menstrual period, diminished when the flow took

place, and retained their violence when it failed. Moral affections and the least exercise, excited the palpitations: at the age of twenty-eight years, they became habitually more violent. When their intensity became extreme, this patient provoked nausea and vomiting, by introducing the fingers into the mouth, and felt herself relieved afterwards. Before having imagined this method, her sufferings were prolonged often during the whole day, or, at least, she could not obtain relief until the distress and anxiety increased to such a degree as to induce spontaneous vomiting.

Such was the state of this woman, when she entered the hospital Cochin, the 20th of September, 1814. From this period until the 25th of January, following, antispasmodics, digitalis purpurea, in its different forms, were used; leeches were applied to the anus, and bleeding was practised in the arm, which procured only momentary melioration. The palpitations, without being stronger, soon became more frequent; the cough became habitual, and the infiltration of the legs, which had disappeared soon after entrance by the use of the preparation of squill, was renewed. On the 10th of February, all the symptoms had become more intense. The respiration was much more embarrassed, and even wheezing; violent palpitations were observed in the whole anterior left region of the thorax: they became insupportable when the head was a little depressed, so that the patient was obliged to remain constantly sitting in her bed. The face, which, until then, had been in a state nearly natural, became pale and bloated. The chest resounded quite well behind, toward the left; it gave a flat sound at

the anterior and right portion; a little obscure in the region of the heart. The pulsations of the heart, which the ear, applied to the chest, could hear very distinctly, were redoubled every night, and, during this kind of regular paroxysm, they were so violent as to heave up the bed-clothes, and could even be heard at some distance.

The pulse was, ordinarily, frequent, small, very irregular, and without harmony with the pulsations of the heart.

Soon, at every step that the patient attempted, she suffered such oppressed respiration that she was in immediate fear of death. The abdomen became voluminous, hard and fluctuating; the urine was thickened, red and small in quantity. Sudden startings frequently disturbed her sleep.

1st March. Constant oppression, respiration short, precipitous; pulsations of the heart unequal, variable, generally sufficiently strong; pulse small, feeble, almost insensible; a veinous red and illuminated expression of countenance; infiltration enormous; suppression of urine.

Lastly, this unfortunate woman is obliged to remain, night and day, in an arm chair, tormented by insupportable anguish, with which she died on the 25th of March, 1815.

Inspection of the Body.—The two cavities of the pleura are full of citrine coloured fluid, and the pericardium contains about 16 ounces of a similar liquid. The heart is much more voluminous than in the natural state; the portion of the serous membrane which covers the right auricle offers here and there some points of erosion. This auricle, at its inferior part,

is three times larger than in its natural state; its texture presents a considerable thickening, the true muscular hypertrophy. The fibres are so much enlarged as to form bundles, similar to the ventricular columnæ. The tricuspid valves are hard, thickened, united together by their edges, and form a kind of cartilaginous septum, pierced in the middle by a hole, which will scarcely admit the little finger. The right auricle does not present any marked peculiarity. The valves of the pulmonary artery, also, offer nothing remarkable. The left auriculo-ventricular orifice has become considerably contracted; its valves form a very projecting border, the sides of which are approximated, and almost contiguous; allowing only a small opening between them, or rather a kind of transverse slit. This border, the projection of which corresponds to the right auricle, is, in some points of its extent, about four lines thick; its texture, of a fibro-cartilaginous nature, offers different points of ossification. The fibro-cartilaginous formation has affected only about half of the valve; and while there was scarcely any motion of this part, the base appeared as flexible as in the natural state. The left ventricle retained its natural capacity, but its walls were evidently hypertrophied: they were more than an inch thick in the greater part of their extent. The caliber of the aorta was contracted; its valves were thickened, hard, cartilaginous, inflexible, and formed by their reciprocal union a kind of irregular ring, the diameter of which was about three lines.

This case presents us with a remarkable, and happily a rare example, of almost all kinds of induration,

affecting at the same time the tricuspid, mitral and aortic valves, and of contraction of almost all the orifices of the heart.

But we would call the attention particularly to the subject of induration of the tricuspid valve. For twenty years we have not collected more than four cases of such hardening. We have cited the preceding as the most interesting. We have never observed this induration, excepting in the cartilaginous state. We have never had an opportunity of seeing these concretions of calcarious phosphate, those ossifications we have so frequently spoken of, in the left heart. The pulmonary artery has never presented us with any change of this kind. Bichat also says, that he has never seen it in the right heart: he was, however, wrong to conclude from this that it could not exist. Corvisart has opposed this too general conclusion, both by reason and fact. Vieusens, Senac, Morgagni, Hunauld, and Joseph-Exupere Bertin, relate some examples of it, which we might add to those observed by ourselves. Most of the authors we have noticed, also, only mention facts of cartilaginous hardening.

We find a case of true ossification of the tricuspid valve, in the *Journal de Medecine*, by Corvisart, MM. Leroux and Boyer, vol. XIX. p. 468.

Case LV.

General William Whipple was affected, for a long time, with many symptoms of disease of the heart; such as palpitation on the least exercise, great anxiety, continual coldness of the extremities. The fa-

tigues he experienced during the American revolution aggravated his disease, and he died.

Upon examination, the right auricle was found dilated. The tricuspid valve was ossified, and closed the right auriculo-ventricular orifice, and was perforated at its free edge with two holes, united by a fissure about an inch long, and nearly a line broad, and at its base with a third hole, which bordered the left ventricle on the mitral valve. The left cavities of the heart were in the natural state.

If the induration of the tricuspid valves, and the contraction of the right auriculo-ventricular orifice are rare, the same alterations are still more so in the sigmoid valves of the pulmonary artery and its orifice. Here, however, are three examples; the first of which belongs to ourselves, while of the two others, one was recorded by M. Louis at the hospital of La Charite, and the other may be found in the seventeenth letter of Morgagni. We shall only give an extract from the two first cases, which we shall have occasion to mention elsewhere.

Case LVI.

A woman fifty-seven years of age had been affected from early childhood with extreme difficulty of breathing on the least exercise, and a violet red colour of the face. Afterward she experienced very strong palpitations, and frequent nasal hæmorrhage. She died at the hospital Cochin of an inflammation of the brain, the paroxysms of which were marked by an augmentation of the beatings of the heart, brilliancy of the eyes, and a rose colour of the lips. The

ventricular contractions were accompanied with a tremor sensible to the hand, applied to the precordial region, and a rushing sound which was confirmed by immediate auscultation. At the opening of the body, we found the foramen ovale still open—the right cavities extraordinarily hypertrophied, and the orifice of the pulmonary artery closed, by a horizontal septum, pierced with a hole, of two lines and a half in diameter, beyond which the artery presented nothing remarkable.

In this case, which is, perhaps, the only one of this kind known, if it is not very analogous to that of Morgagni, which we shall give below, the contraction of the orifice of the pulmonary artery is not the result of an induration of the valves, but appears to be, in fact, an original vice of conformation. We thought we ought, however, to consider it in this connexion, since it is always a disease of the pulmonary orifice, and, furthermore, offers us an opportunity to confirm the existence of two symptoms which we consider to be of very great importance; namely, the vibratory tremor and thrill, which we have regarded as the infallible signs of contraction of one of the orifices of the heart.

Case LVII.

A mason aged twenty-five years was received at the hospital of La Charite on the 5th of August, 1823. He presented all the symptoms of a great obstacle to circulation and respiration. We heard, in the whole anterior part of the chest, a bellows sound, which was stronger in proportion to its nearness to the sternum. Digitalis, bleeding, &c., were

in vain employed; the patient died on the 20th day after he entered. At the opening of the body, we found the right cavities nearly in the same state as in the preceding patient, that is to say enormously hypertrophied. One of the fleshy columns of the right ventricle lay over the orifice of the pulmonary artery, which it concurred to contract: this orifice was, in fact, considerably contracted by the alteration of the sigmoid valves, which form a kind of fibrous rim, the opening of which was about two lines and a half in diameter. The tricuspid valves, yellow, and thickened at their adherent border especially, offered in this latter portion a partial ossification, of about a line in thickness. The left cavities exhibited nothing extraordinary.*

The contraction of the pulmonary orifice, in this case, presents a great analogy with what is observed much more frequently in the aortal orifice; it has been accompanied with the bellows sound, a perfectly constant and characteristic symptom, as we are pleased to repeat. Lastly, in this case you will observe a new proof of the possibility of ossification of the veinous valves, since the base of the tricuspid valve is in fact partially ossified. Here is the fact recorded by Morgagni.

Case LVIII.

A young woman, who had not left her bed from infancy, having the skin livid, and respiration much

* At the commencement of the auricle, towards the pulmonary artery, was a hole of two lines in diameter, bordering the sigmoid valves of the aorta, and establishing a communication between that artery and the right ventricle.

embarrassed, died at the age of sixteen. The right ventricle was hypertrophied, but enlarged, whilst, in the two preceding cases, it was reduced to the smallest dimensions; the right auricle was twice as large as the left, and thicker. The foramen ovale remained entire, and would admit the little finger. The pulmonary sigmoid valves were cartilaginous, and so intimately connected at their free edge, that they scarcely left an aperture so large as a lentil, for the passage of the blood.

IV.—VEGETATIONS OF THE VALVES OF THE HEART.

Case LIX.

Thickening and Vegetations of the Aortic Valves.

Louis Nicholas Menage, aged twenty-seven, tiler, firmly constituted, entered the hospital Cochin on the 24th of April, 1810. He was put in the surgical wards, and presented the following state: bitterness of the mouth, anorexia, urgent thirst, epigastric pain, abdomen loose, little sleep. Three days after entrance, an emetic produced many ejections. The same day the patient suffered much from weakness, oppression, and colic pains. Some days after, he took two medicines which fatigued him much: the abdomen became painful and tumid, as well as the legs, the thighs and the genital organs. We then transferred the patient to the medical wards. Respiration was much embarrassed, the face swollen, the pulsations of the heart were quick and tumultuous, but the œdema of the arms prevented us from feeling

the pulse very distinctly. Aperients were in vain employed; the strength diminished more and more, and the patient, after a long agony, died on the 23d of May, following.*

Inspection of the Body.—The heart adhered very strongly to the pericardium; the walls of the left ventricle were very much thickened and dilated. The aortic valves were much thickened, and surrounded with little vegetations: one of them was perforated.

You observe in this case, although many of the details are wanting, the usual symptoms of obstructions to the circulation. The pulse is very difficult to be perceived: the pulsations of the heart are, notwithstanding, quick and tumultuous. The face is swollen, the abdomen fluctuating and tender, the limbs are infiltrated. The explanation of these phenomena is easily given: the blood, retained in the cavities of the heart, which it distends, excites palpitations; and its accumulation in the lungs and the venous system, determines dyspnœa, ascites and œdema of the extremities.

Case LX.

Vegetations on the Aortic Valves.

Marie Rose Genet, aged sixteen, cotton factory girl, left the Hotel Dieu and entered the Cochin hospital on the 3d of January, 1813. Her respiration was much embarrassed; she felt acute pain in the left side, and hypochondrium; she coughed frequently; the pulse was frequent, small, and regular; the beats

* This person gave no other information respecting his previous state, than that he had been bled twelve times, at the Hotel Dieu, for a swelling.

of the heart were quick and precipitous; the legs, the thighs, and the abdomen were œdematous: she could not sleep an instant.

We could not obtain any information respecting her previous state of health; we learnt, only, that she had not menstruated.

She died some hours after entrance.

Inspection of the Body.—The pericardium was covered by false membrane, much thickened. The capacity of the left ventricle was three times as great as natural, without any appreciable thickening of its parietes. The free edge of the aortic valves presented small projecting vegetations on the side towards the ventricle.

Case LXI.

Ossified Vegetations on the Aortal Valves.

Claude Roger, aged fifty-five, quarry-man, had suffered, for six years, a considerable difficulty of respiration, which was relieved by various modes of treatment without being entirely removed. Nevertheless, the face has become pale and bloated, the inferior extremities are swollen, suffocation seems impending on the least motion, cough is frequent and followed by an expectoration tinged with blood; the pulse is small and frequent, the sleep troubled by starting. In this state the patient was received into the hospital Cochin. The symptoms soon became aggravated; the jugulars presented evident beating, the chest gave a flat sound in the whole of its extent, infiltration was increasing; and death took place on

the 15th of February, 1807, thirty days after he entered the hospital.

Inspection of the Body.—The abdominal viscera appeared healthy; the heart retained nearly its natural volume, the left ventricle, only, is a little dilated; the valves of the aorta are ossified; one of them presents well marked vegetations.

Case LXII.

Vegetations on the Aortic Valves.

Deschamp, aged forty-four, day labourer, of a lymphatic temperament, having from infancy a short respiration, living for three years in a damp district, having never had any other disease than a quartan fever, was admitted, on the 4th of November, 1810, to the hospital Cochin, for a pain, with œdema of the left foot. This disorder being dissipated promptly, and as it were spontaneously, he left the hospital a few days afterwards; but returned on the 25th of December of the same year, affected with continued fever, cough, mucous expectoration, pain in the anterior part of the chest; pulse frequent, soft; cephalalgia, and depression.

We prescribed blood-letting to the extent of xiiʒ, and a pectoral julep.

The symptoms continuing, the patient was again questioned respecting his previous state. He observed that his habitual dyspnœa had augmented within five years, and that he had been subject, from time to time, to palpitations. About the 15th of January following, respiration had become shorter, interrupted by a kind of rushing murmur under the

sternum; obscure and tumultuous palpitations, coinciding with a frequent and hard pulse. The patient coughed, expectorated a viscous matter, and had almost perpetual sweating of the chest and forehead. He laid habitually on the back, *decubitus* being impossible on the right side, whilst he could lie on the left. The repose was interrupted by starting in the sleep, or troubled by dreams, in which the patient thought he saw water fall upon him, and felt, he said, as if the heart were drowned. The sound was a little flat towards the precordial region: dyspnœa and oppression augmented during the *humid* paroxysms: the left leg was œdematous and painful.

The 25th of February, the patient vomited dark-coloured matters, was prostrated with extreme weakness, and died the same month.

Inspection of the Body.—The inferior lobe of the right lung was hepatized; the pleura thickened, soft and red; the corresponding cavity was filled with liquid slightly tinged with blood. The left lung was healthy.

The volume of the heart was double its natural size; the left auricles and ventricles were enormously dilated, with very considerable thickening of their parietes.

The free edge of the aortic valves was covered with soft and whitish vegetations, having the appearance of cauliflowers. The origin of the aorta was covered with similar excrescences.

The right ventricle and corresponding auricle presented nothing extraordinary.

Case LXIII.

Vegetations on the Aortic and Mitral Valves.—Hypertrophia of the Left Ventricle.

Victor-Etienne Cordier, aged twenty-four, locksmith, of habitually infirm health, subject to frequent headachs and nasal hemorrhages, which procured him great relief, having had one in the course of the year 1809 so profuse that he fainted several times, was attacked, a short time after, with an intermittent tertian fever, which continued four months. Being obliged, afterwards, to take the trade of a water carrier, he soon felt, and for the first time, very acute pulsations whenever he went up a high pair of stairs. These palpitations became more and more violent; he abandoned his new employment to assume what he thought preferable—that of a carman. Having been one day suddenly exposed to cold when covered with perspiration, he soon experienced, in the right side of the chest, a sharp pain, which induced him to go to the hospital Cochin, in the month of January, 1812. The pungent pain, dyspnœa, cephalalgia, redness of the face, pulsations of the heart, strong and rapid, the pulse full and vibrating, induced M. Peyrade, then attached to that hospital, to practise blood-letting in the arm. It was followed with marked relief. On the morrow, at the visit, we applied twelve leeches to the anus. This new bleeding, also, had a very advantageous result.

At the end of fifteen days, the patient left the hospital with all the appearances of a perfect cure; but he returned the 7th of April following, presenting the symptoms which follow:—violent headach, with

sense of pulsation, redness of the face, beating of the temporal arteries, dimness of vision, frequent nasal hemorrhagia; cough, with mucous sputa somewhat thickened; pulsations of the heart violent, rapid, superficial; pulse vibrating and regular; suffocation on the least exercise; oppression; flat sound in the region of the heart; startings in the sleep.

Bleeding in the arm produced a relief of short duration. We did not repeat it, because the nasal hemorrhages, which returned almost every day, appeared to supply with advantage every other mode of evacuation, and were constantly followed by melioration of the symptoms.

About the 15th of May, the strength diminished considerably, the face became pale, livid and swollen; the lips lost their vermilion colour, which they had until then retained; the head felt heavy; sleep was interrupted by fanciful dreams, starting from bed, violent shocks, and oppression of breath. The legs began to infiltrate, and the infiltration soon became general. The patient could no longer pass his nights, except by sitting up in bed; the urine became small in quantity, and thick. The preparations of squills, employed in various forms, produced no salutary effect.

About the beginning of the month of June, the slightest distention of the stomach produced suffocation. The patient, who was naturally sad, became more and more sombre and disquieted, and he called for death as the only termination of his sufferings. About the 15th of the same month, new nasal hemorrhages very abundant supervened, and momentarily calmed the suffocation and violence of the pulsations

of the heart, but much augmented the debility. Nevertheless, the dyspnœa became continual, the dull beating of the heart produced merely a kind of formication, the pulse became insensible, infiltration increased, the urine was less in quantity, the patient is reduced to pass his nights constantly sitting on a chair, the head and the right side supported on his bed, overpowered by stupor, which the difficulty of respiration interrupted at every moment. He died about the 25th of June, of the same year.

Inspection of the Body.—Both lungs adhered, at several points, to the parietal pleura; both cavities of the chest contained some ounces of serum; a gelatinous matter, in considerable quantity, covered several portions of the external surface of the lungs, which in other respects were healthy.

The pericardium contained eight ounces of limpid serum. The walls of the left ventricle were about fifteen lines thick at the base: this thickness gradually diminished towards the point of the heart, where it was also quite apparent. Numerous very irregular ramifications were implanted on the sigmoid valves, contracting considerably the orifice of the aorta: smaller vegetations, about the size of millet seed, projected from the tendinous cords of the mitral valves.* The rest of the heart offered nothing peculiar.

This case affords a new proof of the influence which acute diseases of the lungs have upon those of the

* This patient was frequently asked if he had ever been affected with venereal diseases, and constantly replied in the negative; and, farthermore, did not present any trace of it. He had only experienced, at the age of sixteen rheumatic pains, for which he had taken several baths at the Hotel Dieu.

heart. And although the pleuro-pneumonia appeared to have undergone a favourable termination, the ventricular hypertrophy, which was manifested by the most evident signs, soon presented the most positive and unequivocal signs of it. At the same time, the symptoms of cephalic congestion appeared; the epistaxis was renewed with great violence, and proportioned, no doubt, to the augmentation of the hypertrophy of the left ventricle: the quick and violent beatings of the heart, the vibrating and strong pulse, all the principal signs which have been regarded as those belonging to a kind of aneurism, were manifested, although there did not exist any aneurism; that is to say, dilatation of any cavity of the heart. Nevertheless, these symptoms became, by degrees, less and less sensible; and another series of phenomena supervened, which has been wrongly attributed to an aneurism in a certain stage of development. These symptoms are those of an obstacle to the course of the blood, which, in the present case, were found principally about the ventriculo-aortic orifice; which, in consequence of its contraction, was opposed to the free passage of the blood, and compelled it to flow back towards the pulmonary system: add to this, that in consequence of the immobility of the valves, the blood, propelled through the aortic tube, might afterwards enter in part into the ventricle, when this artery came to react on the column of blood.

Case LXIII.

Fungoid Vegetations of the Valves of the Aorta, with Cartilaginous Points.

Cordelier, aged fifty-six, day labourer, had never previously a serious disease, when he was attacked, in the month of February, 1811, with a cold, with at first viscous expectoration, then more thick, opaque and white. It was in this state that the patient decided to enter the hospital Cochin, the 6th of May following. Respiration was difficult, the pulsations of the heart were obscure, but regular; the pulse sufficiently developed and a little hard; the chest did not give a very clear sound, *especially at the left;* the feet were œdematous; slept but little; skin generally warm, without sweat; habitual constipation. (Infus. hys. mel. jul. Kermes, grs. ij. oxymel scillæ, acetat. potassæ.)

Nevertheless, all the symptoms augmented progressively. 17th of May, the patient experienced laborious breathing, attended with expectoration, difficult and mixed with blood; the pulse strong, and prompt. Free blood-letting from the arm does not diminish the disorder. 19th of May, difficulty of breathing more frequent, the sputa suppressed; the patient can rest only in the sitting posture. He died in the evening.

Inspection of the Body.—The right lung was hepatized, and the corresponding thoracic cavity contained a pint of serum, a little yellow. The heart was very voluminous; the cavity of the left ventricle was more than twice as large as natural: its walls were firm, and thicker than in the normal state. The

aortal valves, fungous and spread out like a cauliflower, towards their free edge, offered at their base hard and cartilaginous points. The vegetations which bordered this triple valve were soft, of a grayish white, and were raised, or rather torn, with great facility.

The other cavities of the heart appeared to be in the natural state.

The vegetations of the valves of the right side are not very common: we find some examples of them in certain cases, which we have reported above. Their effects, their symptoms, their treatment, being the same as those of the vegetations of the left valves. We shall now pass on to the general history of the diseases described in this article.

ARTICLE II.

GENERAL HISTORY OF THE INDURATION, AND OF THE VEGETATIONS OF THE VALVES OF THE HEART, AND OF THE CONTRACTION OF ITS DIFFERENT ORIFICES.

SECTION I.—*Anatomical Description of the Induration of the Valves of the Heart in general.*

The characters presented by indurations of the valves vary accordingly as they affect the valves in the whole of their extent, or some parts only; according to the direction which they impress on these organized valves, that is to say, according as they are approximated to or removed from the orifice to

which they are affixed; and, lastly, according to the different degrees of induration. When they are affected throughout their whole extent, they are entirely deformed, or evoluted, representing a kind of ring, or elliptical border, or, in some cases, a kind of button-hole, with edges of various thicknesses, resembling the lips of the glottis, the opening of which is frequently not more than three or four lines in its greatest diameter. The surface of the induration is smooth and polished, unless when the degenerescence is complicated with the existence of vegetations, or osseous asperities. In this state, the texture of the valves and their fibrous circles present, sometimes, a truly cartilaginous hardness, and at other times the consistence of fibro-cartilage, or only that of tendon: it cracks under the dividing instrument, and the aspect of the divided surface varies according as the induration is tendinous, fibro-cartilaginous, or cartilaginous. In a more advanced degree, this kind of induration is transformed into a species of ossification, of greater or less extent: in some cases, a considerable portion of the valve does not present any alteration; whilst the duplicature of its base, or rather the fibrous zone, is already partly cartilaginous, or even ossiform, or at least incrusted with some calcarious concretions: at other times, the base is perfectly healthy, whilst the processes and indentures of the valves have taken on the transformations indicated. The valvular processes sometimes adhere, or blend together, so as almost completely to obliterate the orifice. Often, we only find between the flaps of the valves simple depositions or layers, more or less extensive, of phosphate of lime, the whole of which are

united in one piece. These plates are, ordinarily, covered by the internal membrane; but we see them, sometimes, in immediate contact with the blood. It is not uncommon to meet, on the free edge of the valves, with a great number of small cartilaginous grains, or osseous, globular, or pisiform concretions. The valves, thus altered, present quite a marked redness. It is evident, that, in such a state of malformation and hardness, they are unfitted to carry on the important functions which nature has confided to them.

I.—INDURATION OF THE MITRAL AND SIGMOID AORTAL VALVES.

The induration of these valves, which we shall denominate the left, or arterial valves, is much more frequent than that of the right, or venous valves. To what can we attribute this remarkable difference? According to the author of the Essay on the Organic Diseases of the Heart, it proceeds from the circumstance of the left valves having an organization more decidedly fibrous, and better calculated to receive the matter which transforms them into cartilage, or the calcarious salts, which gives them an ossious or stony hardness. This explanation, or rather this hypothesis, is far from being satisfactory. The more efficient, and perhaps the real cause of this difference, may depend upon the unequal activity of the left and right cavities, and in the difference of the blood which passes through them. The left cavities receive a more rigorous, exciting, and irritant blood, than that which permeates the right cavities:

it is not, therefore, very astonishing that their valves should be those for which the osseous induration affects an unfortunate predilection, especially if we admit the opinion extremely probable, according to which we have considered this morbid alteration as a consequence, or termination of a slow phlegmasia. However this may be, the induration offers some peculiarities, accordingly as it has its seat on the mitral or semilunar aortic valves, which is evidently to be attributed to the difference naturally existing between them. It is particularly in the induration of the first, that we observe the different conditions we have above described. We have, sometimes, seen the induration confined to the tubercles of Arantius, degenerated, in that manner, about the size of a common pea. At other times, we have found a kind of stony, pyramidal, or twisted concretions, which projected, in the manner of stalactites, in the cavity of the aorta, or the heart; whilst, by one of their extremities, they were implanted in the base of the valves, or forced, more or less deeply, into the substance of the ventricle. In one instance, we have found the aortic valves, for the most part, detached and loose. On examining the arterial valves, we have been enabled to distinguish four different forms of induration; the differences in which depend, perhaps, upon the variable proportions of animal matter, and of the phosphate and carbonate of lime, which enter into its composition. The first form constitutes the conversion of the valvular tissue into a tendinous, fibro-cartilaginous, or cartilaginous substance. In the second, merely an exhalation of calcarious salts takes place on the surface of the membranes. In the third,

the calcarious substance is seated deeply within the valves. Lastly, the fourth form is characterized by an ossification, which seems to be more allied to the laws of normal osteogeny, in which the osseous state succeeds to a state at first cartilaginous; consequently, this fourth form is only the first, arrived to a more advanced stage; and it is with reason that the yellow or cartilaginous indurations have been regarded as the rudiments of ossifications, *inchoamenta ossificationis.* When the induration is situated on the mitral or sigmoid valves, they are sometimes more or less depressed; at other times, more or less elevated: from whence results a variable contraction of the orifices. It has appeared to us, that, in general, the deformed valves project forward, in such a manner as to form a kind of arch, or *infundibulum,* in a direction corresponding with the course of the blood. Thus, we have seen the bicuspid valve pushed, (if we may be allowed the expression,) so as to form a projection within the ventricle; while we have seen the sigmoid valves distorted and turned backward towards the walls of the aorta. Nevertheless, we have observed, also, an inverse tendency for the latter; as if, during the systole of the aorta, the blood had flowed backward towards the ventricular cavity.

II.—INDURATION OF THE TRICUSPID VALVES, AND OF THE SIGMOID VALVES OF THE PULMONARY ARTERY.

We have already said, that the induration of the valves of the veins is less frequent than that of the valves of the arteries; but Bichat was wrong in de-

nying the existence of them, as we have proved by facts. In general, the induration of the right valves is simply fibro-cartilaginous, or cartilaginous. Sometimes, however, we find in them partial ossifications. It has appeared to us that these ossifications, in general, coincide with an unnatural communication between the left and the right cavities. If this remark be just, it confirms the idea we have advanced respecting the cause of the frequent occurrence of ossification of the left valves, compared with that of the right. In such kind of communication, a certain quantity of red or arterial blood would pass into the right cavities, and produce more or less irritation.

In some of the cases we have reported, the right valves formed a kind of partition or diaphragm, open in the centre, or towards the circumference. Farthermore, most of the arrangements we have described when speaking of the induration of the valves of the arteries, are also met with in cases of the hardening of the right valves: hence the reason why it would be useless to dwell any longer on this subject.

SECTION II.

ANATOMICAL DESCRIPTION OF THE VEGETATIONS OF THE VALVES OF THE HEART IN GENERAL.

The valvular vegetations have been designated, by M. Laennec, by the name of varicose vegetations. This denomination, it appears to us, should have been adopted, because these kinds of excrescences have an appearance very similar to that of warts; and espe-

cially to that of those venereal excrescences which are observed on the genital organs. They vary in colour, size, number, form, consistence, more or less adhesion to the valves, and in their mode of formation. They are, ordinarily, of a greyish or yellowish white colour, relieved, wholly or in part, by a more or less bright red colour: their size, very much like that of tubercles, varies from the size of millet seed to that of a pea: their number is subject to great variations. We find them, sometimes, isolated: at other times united together, clustered, or agglomerated, in such a manner as to resemble cauliflowers. They have, in general, a rounded, granular form, with a smooth and sometimes unequal surface. Some of them are soft, easy to crush, and may be detached by the slightest traction, as if they had not had sufficient time to become organized. These granulations have appeared to us to have much analogy with those of the serous membranes so frequently met with in cases of chronic inflammation. The resemblance is sometimes so striking, that there would be considerable difficulty in distinguishing them, as we have been assured, when comparing the granulations of the pleura and pericardium with the valvular vegetations met with in the same subject. We might give to these vegetations the name of *albuminous vegetations*.

Other vegetations present greater resistance: with a little force we may, however, separate them from the valve without destroying them. They are from three to four lines in diameter; and their figure, instead of being globular, is cylindrical, or pyramidal. They are, probably, those excrescences, which, in

the infancy of pathological anatomy, were taken for worms.

Finally, others have contracted such an adhesion with the valves; or rather have become so deeply rooted in them, that we frequently can only remove them by tearing them with the nails, or cutting them with the scalpel. To these will apply, exclusively, the name of *varicose*.

The vegetations select the free edge of the valves, in preference to any other parts of these membranous organs. We find them sometimes, however, on the whole extent of the internal membrane of the auricles, and on the pericardium. They contract the orifice of the valve, in proportion to their number and their volume. They are met with more frequently in the aortic valves than elsewhere.

According to M. Laennec, these vegetations are formed by a kind of organization of polypous or fibrinous concretions deposited on the surfaces of the valves and the auricles, in consequence of some difficulty of the circulation. It will not be disputed, that they may be sometimes formed in this manner; but it appears to us equally certain, that these vegetations are often nothing else than the result of the organization of a puriform, albuminous exhalation, secreted by the inflamed valvular or auricular membrane. This mode of formation appears to us the more probable, as the vegetations have a great analogy, as we have already noticed, with the albuminous granulations which are observed to follow the serous phlegmasiæ. The phlegmasia of the internal membrane of the aorta and left cavities of the heart being so much more frequent than that of the inter-

nal membrane of the pulmonary artery and right cavities, we may easily conceive how it happens that the vegetations are met with most frequently on the aortic and mitral valves. It would seem that the contrary ought to be the fact, if the vegetations are formed constantly, according to the mode prescribed by M. Laennec; because the polypous concretions are much more common in the right cavities of the heart than in the left. What confirms us still more in our opinion, is the case of varicose vegetations on the mitral valve and the left auricle, related by M. Laennec himself. In fact, as it appears to us, there existed in this case a phlegmasia of the internal membrane of the aorta and the auricle; "because the sigmoid valves of the aorta and internal membrane of this artery offered a very deep red colour, which contrasted with that of the ventricle, which was of a pale red, and almost yellow. The left auricle offered, in the whole extent of its internal surface, this same deep red colour. This surface, for the extent of about an inch square, as well as the free edge of the mitral valve, was covered with vegetations, some of which were slightly rose-coloured, or violet, and as if injected with small vessels. At their free extremity, a number of them presented small clots of coagulated and black blood, strongly adherent."*

This very remarkable case seems quite proper to prove, that the vegetations may have been produced in the manner we have indicated. The fibrinous concretions adherent to the extremity of the vegetations do not invalidate in the least our explanation:

* Work, cited tom. ii. pp. 242, 243.

they rather serve to support it; since we have already clearly shown, and shall presently demonstrate, that inflammation is one of the circumstances which has a leading influence in most cases of concretion of the blood.

SECTION III.

OF THE SYMPTOMS AND DIAGNOSIS OF INDURATION, AND VEGETATIONS OF THE VALVES OF THE HEART.

We shall unite, in one view, the indurations and vegetations of the valves, in relation to their diagnosis; because one of the constant and common effects of both is more or less contraction of the orifices of the heart, and because the signs which characterize them result from the mechanical obstacle which this contraction opposes to the circulation. It is, farthermore, evident that the valves loaded with vegetations, or converted into a cartilaginous or osseous structure, become unfit to perform the movements of elevation and depression, without which the circulation cannot go on in a regular manner. The diagnosis of indurations and vegetations of the valves of the heart, or, if you wish, of contraction of the orifices of the valves, has always been regarded as very difficult and obscure, if not perfectly impossible. We hope, however, that every one, after having read this article attentively, will be convinced that this disease is one of those which may be most easily ascertained in the present day.

The beautiful work of Corvisart does not give any mode of ascertaining with precision the contraction

of the right orifices. In this case, in fact, the exploration of the aortic pulse, or of the great circulation, which Corvisart regards as the source of the most certain signs of contraction of the ventriculo-aortic orifice, is found useless for ascertaining that of the ventriculo-pulmonary orifice: it would be necessary to explore the pulmonary pulse, or the smaller circulation, which is altogether impossible.

"Could we examine," says Corvisart, "the pulsations of the pulmonary artery, or its branches, in the same manner as we do the pulsations of the aorta, or its branches, we should recognise, with equal ease, both the contractions of the right orifices of the heart, and those of the left. The obscurity which envelops the symptoms of contraction of the right orifices, is never entirely dissipated at the time it becomes requisite to ascertain an imperfect obliteration of the left auriculo-ventricular orifice. However, some peculiar symptoms will enable us to recognise this affection. Of this number is a peculiar *stridor*, difficult to describe; sensible to the hand, when applied to the precordial region, and even to the hand which feels the pulse, but in a less distinct manner. Farthermore, the pulse is less regular than in the case of contraction of the right orifices, but less irregular than when the aortic orifice is altered. In the case of contraction of the aortic orifice, the pulse may preserve a certain degree of hardness and rigidity, but never much plenitude or regularity. This constant and permanent irregularity will always suffice to establish an accurate diagnosis of the contraction of the mouth of the aorta. Here there is no obscurity, and when the physician has no other guide than

this kind of undulation, *stridor*, heavy tremor, this easily distinguished character of the pulse, in all cases of this kind, his diagnosis can no longer be uncertain." We may be permitted to say, that we here find the illustrious physician slightly contradicting himself. In fact, he gives for the diagnosis of contraction of the aortic orifice almost the same signs as those which he has above pointed out for the contraction of the left auriculo-ventricular orifice: but it happens that the obscurity which envelops the symptoms of contractions of the right orifices are not entirely dissipated at the moment we wish to ascertain that of the left auriculo-ventricular orifice:" therefore it will not be entirely dissipated when it is required to ascertain the contraction of the mouth of the aorta, the signs of which, according to him, are essentially the same. But this is not all; it is difficult to feel this particular character of the pulse noticed by Corvisart. M. Laennec assures us, that he has never been able to perceive it even in subjects who presented in the most evident manner, in the precordial region, the above-mentioned tremor; which, according to the same author, is only sensible to the hand in those cases where the contraction is very considerable. The result of all this is, that the signs pointed out by Laennec are not sufficient to characterize, generally, the contraction of the orifices of the heart; and they would never enable us to ascertain the contraction of each of the orifices in particular. Lasting honour should, however, be rendered to this profound observer;—for, although it be true that he has not entirely torn aside the veil which has so long enveloped the diagnosis of the diseases of the

valves of the heart, he is at least the first who has drawn aside its folds. It is certain that the characters of the pulse indicated by Corvisart, the rushing murmur of the precordial region, are exceedingly valuable symptoms which ought not to be neglected. The same is true of the defect of harmony, the species of contradiction, if we may be allowed the expression, which exists between the pulsations of the heart and those of the pulse, in the affections of which we are speaking. We have, now and then, been able to suspect a contraction of the orifices of the heart by means of this symptom; that is, by observing the very strong pulsations of the heart coinciding with the extreme smallness of the pulse. But we must acknowledge that this symptom is met with in different diseases from those which at present occupy us. There is a method of exploration for ascertaining the contraction of the several orifices of the heart, which no other can supply: we refer to auscultation, either *immediate* or *mediate*. The symptoms which this mode of exploration furnishes, already pointed out by M. Laennec, are the following: 1st, When the disease affects the auriculo-ventricular orifice, we hear, during the contraction of the auricles, which continues longer than in the natural state, a very distinct sound, which resembles the sound of a blow given by a file on wood, or that of a bellows quickly pressed. 2nd. When the contraction is situated about the arterial orifices (ventriculo-pulmonary and aortic,) the sound of rubbing, to be presently described, is the same; but it is coequal with the contractions of the ventricles, and of the pulse. 3d. If the left orifices are contracted, the pathognomonic sound will

be heard more especially in the region of the cartilages of the fifth, sixth and seventh ribs: whereas, if the contraction occupies the right orifices, the same sound will be more particularly heard at the inferior part of the sternum. 4th. The bellows-sound appears to coincide with the cartilaginous, or fibro-cartilaginous induration, and with the contraction produced by vegetations; that of the *file*, on the contrary, announces rather the contraction produced by open induration.

We have so frequently had occasion to confirm the absolute certainty of these symptoms, they have enabled us to ascertain the contractions of the orifices of the heart with so great facility, that we do not fear to repeat, that the diagnosis of this disease may be established in the most positive manner. We allow, only, that cases now and then occur, in which it is somewhat embarrassing to designate with precision which is the orifice constricted: but, on supposing that this cannot be determined, the inconvenience would be of no consequence. The only thing truly important is to know whether any orifice be contracted. Now, it is always possible to arrive at this certainty, by means of the symptom which has been so frequently indicated. It has never failed us, it has never deceived us. We have reported six cases in which the autopsy has demonstrated its exactness. We might augment the number, if it appeared necessary; and this would be of much consequence, if the contractions of the orifices of the heart were a rare disease.*

* It sometimes happens, that we hear a bellows-sound in the precordial region, without there being contraction of the orifices; but then this sound

Nothing appears to us more easy to be conceived, than the mechanism of the sound which accompanies the constriction of the orifices of the heart. The blood being obliged to pass from the cavity of the auricles or the ventricles, across a very narrow opening, must necessarily produce more or less friction; and it is precisely this friction which produces the murmur, or jarring thrill of which we have spoken. In the same manner we may explain the vibratory tremor, which is heard in the precordial region, and which M. Laennec has justly designated by the term purring tremor (*fremisement cataire,*) because it so nearly resembles the sound produced by cats when the hand is drawn kindly over their back, in which they respond to such caresses by the peculiar *rale* which every one may have observed.*

The symptoms we are about to offer, are the only ones which characterize and specify the contractions of the orifices of the heart. But there are others which remain for us to make known, derived from the influence which this affection exercises upon the functions in general, and especially on those of the circulating system. These symptoms are not less constant, for the most part, than the preceding, but they are much less important for diagnosis: they are, indeed, very equivocal, as they are common to all

only takes place at intervals; and this circumstance is sufficient not to confound it with that produced by the contraction, which is heard continuously.

* The intermittance, inequality and irregularity of the pulsations of the heart, are observed, more particularly, in the cases of lesions and contractions of its orifices. It would be superfluous to offer, in this place, any cases relative to this subject; but we would request the reader to consult the article relative to it, in the work of M. Laennec.—*Traite de l'Auscult. Med.* tom. ii. p. 330, et suivantes.

diseases which produce an obstruction to the circulation, or even the respiration. These symptoms have been given by many authors, as peculiar to aneurism of the heart: which is a great error; for, in these cases, aneurism of the heart, if it exists, is far from being the first cause of the phenomena observed, it is only one of the effects, or, if we may be permitted the expression, accidents of contraction of the orifices. We have frequently described the phenomena in question, in several preceding cases. Nevertheless, we are obliged again to present a rapid sketch of them.

A. *Influence on the Circulation.*

We have already pointed out some of the symptoms furnished by the circulation, at the beginning of this article: we shall consider them here. The patients, affected with contraction of the orifices of the heart, suffer palpitations more or less violent, more or less frequent, more or less prolonged; and which the least exercise, the least emotion, renders much more sensible. The pulse, small, hard, unequal, irregular, and intermittent, contracts by its small degree of fulness, with the pulsations, frequently energetic, of the heart. It is less irregular, when the disease affects the right orifices, than when it affects the left. The blood can no longer traverse freely the circulating centre, obliged, as it were, to flow back upon itself, distending the lungs, the pulmonary artery, the right cavities of the heart, the large veins, and all their branches: thence the serous infiltration, and even passive hemorrhages: thence the lividity, and violet injection of the face, which have been too generally regarded as the infallible symptoms of disease

of the heart, and which do not indicate any thing more than an impediment to the circulation: thence a yet greater injection of almost all the mucous membranes: thence a swelling of the brain, and sub-apoplectic symptoms: thence a similar swelling of the liver.* These symptoms are all so easily explained, according to the laws which preside over the mechanism of the circulation, that we think it unnecessary to give a more particular analysis of them.

B. *Influence on Respiration.*

A slight dyspnœa, which patients designate by the name of short breath; panting, after more than usual exercise, after having gone up stairs, for example, are the first derangements of respiration; but soon the disorder augments and increases until the most painful dyspnœa and the most distressing suffocation supervene: whence the name of asthma, by which the vulgar know this disease, and the energetic, expression of one of our patients, who affirmed that he strangled rather than breathed.†

C. *Influence on Locomotion and Innervation.*

The disorders of these functions are intimately connected with those of respiration, and are, in some measure, proportional to them. Who can portray the picture of the unfortunate man suffering from the anguish of extreme contraction of the orifices of the heart? The despair, horror, fright and anxiety ex-

* Pulsations of the jugular veins are frequently observed in the case of lesion of the orifices of the heart, and always indicate an embarrassment of the circulation, but not the situation of the obstacle.

† The dyspnœa depends, principally, on the distention of the blood vessels of the lungs.

pressed in every feature; his eyes protruding, haggard, distorted; his eyebrows raised; the nostrils dilated; his mouth open, as if to express his wish to respire, and the efforts which he makes to satisfy this urgent want: it is, for the same reason, and by a true *synergy*, that all the muscles which concur to respiration, contract with extreme force: incapable of supporting the horizontal posture, the superior limbs fixed on the bed, to give a point of support to the inspiratory muscles, the trunk strongly bent forward; he utters the most plaintive groans, and, with an uninterrupted voice, not unfrequently accuses the inefficiency of medicine, implores death, and would even hasten it himself, if his failing strength and the circumstances surrounding him would permit. He no longer tastes the pleasures of sleep; or, if he should happen to fall into a doze, is tormented by painful dreams, and awakes as if by sudden surprise. In some cases, he experiences moments of relaxation; and, during this kind of truce, truly delicious, he cherishes the happy idea of an approaching cure; but a new attack of asthma soon dissipates all his hopes. In the mean time, after efforts, of which the conservative power is alone capable, the muscles of respiration at last fall into a state of exhaustion, like all the rest. The patient, incapable of the least motion, can no longer sustain himself: his body, obeying its own weight, falls on the bed, no more to rise: his voice is extinguished, his eyes are tarnished, and the features discomposed—he expires;—too happy, if a sudden death has spared him the long-continued pains which we are about to describe.

We have not spoken, in all that precedes, of the

pain which may accompany the presence of the diseases of the orifices of the heart. We ought to say here a few words respecting them. Pain, a symptom so frequently unfaithful in many diseases, is only of very feeble assistance in forming a diagnosis of the contraction of the orifices of the heart. In many cases, we observe not altogether pain, but a sensation of embarrassment, of inexpressible pressure in the precordial region. We occasionally see, however, patients who suffer a deep-seated lancinating pain, corresponding with the pit of the stomach, which might mislead those who are too much disposed to see almost every where inflammations of the stomach. Lastly; it happens, also, that patients do not complain of any kind of suffering in the region of the heart. However this may be, whenever pain exists it is a new motive to lead us to consider indurations, and some of the vegetations of the valves, as the result of a phlegmasia, more or less chronic or subacute.

If it be extremely easy to recognise these diseases when they have produced a considerable contraction of the orifices, it is much less so when they have only begun to be developed. In every case, a slight, habitual dyspnœa, which augments on the least exercise, palpitations, the cough and choked sound which accompany the contractions of the heart, a little œdema about the malleolæ, with the knowledge of previous circumstances, are data, which permit us at least to suspect the disease, and which invite us to use the means most proper to remove it.

SECTION IV.

OF THE CAUSES OF THE VEGETATIONS AND INDURATIONS OF THE VALVES OF THE HEART.

The causes of these diseases are essentially the same as those which determine the affections of the aorta, of which we have already given some account. It would, therefore, be to employ superfluous repetition to return to them in detail: we shall only say, that external violence to the precordial region, phlegmasiæ of the precordium and neighbouring organs, too fatiguing exercise, are causes, the frequency and activity of which cannot be too often stated.

The syphilitic virus has been regarded, in these latter times, as the most common cause of many of the diseases of the heart and vessels, and especially of valvular vegetations. We will not deny the influence of such a cause—but, founded on the practice and observation of twenty years at the hospital des Veneriens, we dare to affirm that the influence of the above cause has been exaggerated. We have opened many individuals who had been affected with venereal diseases, without finding any vestige of vegetation of the valves; and we have encountered this lesion in persons who have never been affected with syphilis; and in a young girl, particularly, who possessed all the physical signs of virginity. We should, therefore, admit with great reserve, and much restriction, the opinion of MM. Corvisart, Scarpa, and others, on the nature of the vegetations of the valves and other diseases of the blood vessels.

SECTION V.

OF THE TREATMENT OF VEGETATIONS AND INDURATIONS OF THE VALVES.

When the nature of a disease is known, it is evident that it is on this knowledge that the treatment ought to be supported. All our methods, in fact, ought to proceed in the inverse ratio of the immediate causes of the disease: but a multitude of considerations, which we have brought to light elsewhere, have influenced us to believe that very frequently the morbid changes in the valves take place, in fact, under the influence of phlegmasia: consequently, their treatment ought to be more or less antiphlogistic. It should consist, therefore, of general and local bleeding, of rather a strict diet, preparations of digitalis; in one word, of the same means which we have recommended in the treatment of aortitis, and its effects.

It would be useless to inform our readers that the treatment cannot have satisfactory and complete results, excepting so far as it is applied to the origin of the disease. But, when this is much advanced, the changes in the valves are much advanced, the contraction of the orifices has reached a high degree; consequently, the only success which we can expect from the best regulated means is to relieve the patients a little, and to prolong, for a certain time, their painful existence. All the agents, hygienic and therapeutic, ought no longer to be employed, except as simple palliatives.

We have frequently been able to remove the most

urgent symptoms of diseases of the valves; such as dyspnœa, anhelation, infiltration, &c., by the employment of sanguine evacuants, diuretic, aperient, anodyne medicines, pediluvia, revulsives, &c., seconded by absolute repose of mind and body, and by a rigorous diet. But this cure, although it appears somewhat wonderful, is only momentary. The symptoms are again renewed, whenever the patients give themselves up to any kind of excess whatever. We cannot too often repeat, that perfect repose is indispensable in the case of contraction of the orifices of the heart. It is still more requisite, when the patients are oppressed by the least exercise; as we can safely assert, that the principal cause of diseases of the heart may be traced to violent and forced exertions; such as the chase, dancing, and all the professions which require energetic and prolonged endeavours.

It is necessary to say, that, in this disease, as in all others, it is the cause which it is most important to combat. The physician ought, then, to seek out the cause with the utmost care; too happy, if, after having found it, he has the power to vanquish it! Farthermore, we should say, for the consolation of patients, that they may live a number of years with contraction of the orifices of the heart, unless it has arrived at an extreme degree. We think, also, that the physicians of the present day, being better instructed in the true nature of indurations and vegetations of the valves of the heart, and much more enlightened as respects the diagnosis, are able to treat them with much greater advantage than has been done heretofore. In fact, it is especially at the com-

mencement of diseases of the heart, that we can hope to combat them with success; but it is auscultation, alone, which can furnish us with the means of ascertaining these diseases at the very commencement of their existence.

An invincible difficulty in the treatment of diseases of the heart, in general, is the continual action to which the organ is subjected. The first indication, when an organ is diseased, is to place it in the most complete repose; but this indication it is evidently impossible to put in practice in the diseases of the heart. The absolute repose of this organ, this *branch* of the vital tripod, would be at once an inevitable cause of death both to it and every part of the individual whom it animates. In truth, the blood being the natural stimulus of the heart, the bleedings we have recommended, the anodynes and demulcent drinks, diminish this exciting power, and remedy, as much as possible, the inconvenience of being unable to resort to a method so efficacious and rational as that of which we shall presently speak—the repose of the suffering organ: these means do not permit an absolute repose, but they can reduce its action as much as is compatible with life.

BOOK SECOND.

THE DISEASES OF THE HEART.

PRELIMINARY CONSIDERATIONS.

In order to obtain an exact and complete idea of the anatomy and physiology of the heart, it is necessary to examine, separately and analytically, the structure and functions of the various parts which compose it; and, to form just and complete notions of the pathology of that important organ, it is indispensable to study, separately, the diseases of the various textures which concur in its formation. Corvisart has followed the method we are about to indicate; but he has not comprised in his division the pathological lesions of many parts which enter essentially into the structure of the heart; such as the arteries, veins, and nerves of the internal membrane of that organ. To render our classification as exact as possible, we have thought it our duty to divide the diseases of the heart into those which affect its internal membrane;* those which affect the external; those which are situated in the muscular substance, which constitute,

* We have considered, along with these, the diseases of the fibrous tissues, which are met with in the duplications of that membrane.

properly speaking, its middle membrane; and in those which occupy its vessels, nerves, or cellular fatty texture. We have already given a history of the pathological lesions of the internal membrane. Nothing remains to us but to describe the others; which will form the subject of the following sections and chapters.

SECTION I.

DISEASES OF THE PERICARDIUM.

This section will consist of two chapters. In the first we shall treat of pericarditis (inflammation of the pericardium,) and its consequences; the second will be consecrated to the study of hydro-pericarditis, and pneumo-pericarditis. Effusions of blood in the pericardium, being ordinarily the consequence or result of some other disease, rather than the primitive or essential one, we have thought a particular chapter need not be consecrated to them.

CHAPTER I.

OF PERICARDITIS AND ITS CONSEQUENCES, SUCH AS ALBUMINOUS EFFUSIONS, FALSE MEMBRANES, CELLULAR ADHESIONS, FIBRO-CARTILAGINOUS, OR CARTILAGINOUS MEMBRANES, OSSIFICATIONS OF THE PERICARDIUM, &c.

ARTICLE I.

PARTICULAR OBSERVATIONS RESPECTING PERICARDITIS, EITHER ACUTE OR CHRONIC.

SECTION I.

REMARKS ON ACUTE PERICARDITIS.

We shall begin with a case of acute pericarditis, extracted from the manuscripts of Joseph Exupere Bertin, father of the author of this work.

"In the course of the year 1739, a young man, aged from sixteen to seventeen years, after having ridden post for several days, was taken, on his arrival in Paris, with excessive pain, and extreme difficulty of respiration; his pulse was bad, and denoted sudden death. This young man became gradually weaker every moment, and, finally, died in the course of two days.

"I examined the body, in presence of M. Hunauld, who suspected a polypus in the pulmonary artery. We found, on the whole surface of the heart and auricles, a layer of lymphatic substance, rather compact, and about the thickness of a dollar. The remainder of the pericardium is filled with a bloody

serum. On opening the pleura, I found the same thing on the whole surface of the lungs, and a great deal of bloody serum effused in the cavity."

This case, although it leaves many details to be desired, offers us, nevertheless, some of the most prominent symptoms of pericarditis: the inspection of the body proves that such was, in fact, the nature of the disease. The mortal anguish, the extreme dyspnœa, the constant fainting, the bad pulse, are sufficiently certain, if not infallible signs of pericarditis. We say that these symptoms are not infallible, because, in fact, we sometimes meet with them in pleurisies not complicated with pericarditis. Nothing, in other respects, is more frequent than such a complication, and it is the reason why authors have so frequently confounded these two diseases. The case we are about to cite is itself a new proof of the complication to which we allude. Nothing is, in fact, more rare than cases of pericarditis exempt from complication: here, however, is one which we shall proceed to relate.

Case LXIV.

Acute Simple Pericarditis.

Laurent Barthelemy, twenty-six years of age, was admitted to the hospital Cochin on the 20th of July, 1818, treated a short time before, at la Pitie, for a catarrhal affection. He complained of insupportable pain in the side; his face was pale, and pinched; respiration was short and very painful at each inspiration, the painful part, which was on the left side, became more insupportable, and drew tears from the patient; the chest gave a flat sound on this side, a little more clear at the right; the sputa were mucous,

frothy and mixed with bloody striæ. The patient kept himself bent forward in order to breathe more easily; it was impossible for him to lie down in his bed; the pulse was small, contracted, but regular. Twenty leeches were applied to the painful part on the first days of entrance. Notwithstanding, the pain continued, dyspnœa increased, and the patient passed the following night in a state of inexpressible anxiety. A blister applied the next day procured momentary relief. The pleuritic pain disappeared; but the difficulty of respiration and emaciation augmented: we observed alternations of diarrhœa and constipation: In the last case, the symptoms were exasperated, and the dyspnœa and anxiety considerably increased. Lastly, about a month after entrance, the patient died. The inspection of the body was made by MM. Pichon and Belmas.

Internal Condition.—No infiltration, abdomen only a little swollen.

Thorax.—After having raised the sternum and cartilages of the ribs, we observed an immense pouch, extending more to the left than right, where it occupied, nevertheless, a very extensive space. The right lung was crowded upward, but much less in comparison, with that of the left lung, which did not occupy more than a twentieth part of the left thoracic cavity. The whole pouch, formed by the pericardium, was seven to eight inches broad, five deep, and ten or eleven inches long: on opening its walls, there flowed out at first a little turbid serum, in which floated flakes of albumen, and soon some pus the odour of which was so infectious that we could not stay in the room. The heart, compressed, shrunk and apparently atrophied, occupied only a very small space

in the cavity of the pericardium, and was less than half the natural size. The serous membrane, which covered it, was very thick and covered with a purulent and friable false membrane. The pericardium itself, in the whole of its extent, had acquired a very considerable thickening, (about six lines.)*

The pleura and lung were, in other respects, healthy.

Case LXV.

Pericarditis, Complicated with Granulations in the Lungs.

Henry Meunier, domestic, aged seventeen years, was admitted to the hospital des Veneriens the 30th of March, 1811: he was affected with chancres on the glans and free edge of the prepuce, and with inflammation of this last part. After twenty-four hours' treatment, the principal surgeon had him carried to the Infirmary of Medicine. This young man experienced, at that time, a dry and frequent cough, and wandering pains in the right side of the chest; there was nausea and a saburral state of the tongue. The physician, who officiated in our stead that day, prescribed an emetic and demulcent anodyne drinks. Two days afterwards all the symptoms were aggravated. The pain having seemed to be fixed on a single point of the right chest, we applied a blister there, which did not appear to produce any other effect than to scatter the pain and render it more general. The symptoms increased in intensity. In the evening, and during the night, the dyspnœa

* The thickness of the pericardium, indicated by MM. Belmas and Pichon, depended, very probably, on the presence of false membrane adhering to its internal surface.

became extreme, accompanied with the most acute anxiety and almost absolute impossibility of remaining two minutes, in succession, in the same position. The cough became more frequent, and assumed a convulsive character; the expectoration was more abundant and puriform; the face became swollen, a general œdema appeared, the pulse was constantly small and convulsive, and the patient, in a short time, died.

Inspection of the Body.—The pleura costalis adhered at almost all points, with the pleura pulmonalis, by dry false membrane, which appeared to have been of long standing.

The pericardium was distended by a turbid and reddish serum. The serous membrane, thickened and of a rose-colour, was covered with soft reddish concretions, removable with great facility: on the fold which covered the heart, very large long concretions, had the appearance of fungous vegetations, and some were notched like the crest of a cock; one would have thought, at first, that these albuminous concretions, were united with the texture of the heart, or, at least, with its membrane, and were apparently identified with it, but we easily tore it away by pulling very lightly, and without disturbing the continuity, and we then observed it underneath the reddish serum, and three to four times thicker than in the natural state. On cutting through this, we distinguished perfectly the line of demarcation, which separated it from the fleshy fibres of the heart, which were perfectly healthy.

The lungs were in a state rather difficult to describe; we did not perceive any tubercles to the touch, but we discovered in them small grayish very

numerous points, and two or three inconsiderable vomicæ of purulent matter; they were swollen with reddish and frothy fluid, and even a little carnefied at the superior and posterior part.

Meunier presented, on entering the infirmary, the symptoms of a catarrhal gastric affection, and the inflammation of the pericardium was enveloped in profound obscurity, which was not removed either by the dry cough, or the wandering pains of the chest. The symptoms of gastric embarrassment contributed still more to remove every idea of inflammation, and seemed to indicate a treatment, which could not but aggravate the principal disease. However this may be, after the use of an emetic, the disease appeared, in fact, to augment in intensity, without any thing having announced to us its true character. A local pain was felt, it is true, but it did not correspond with the seat of the disease demonstrated by the autopsy, and it seemed to announce merely a pleuro-pneumonia of the right side, which decided us to prescribe two bleedings in the arm, and the application of leeches to the painful part. Lastly, the dispersion of the pain, on the application of a blister, made us suppose that we only had to contend with a pleurodynia.

In the meanwhile, the violent symptoms augmented, the anxiety was at its height, and the cough convulsive; the patient could no longer keep the horizontal posture; every circumstance announced that the disease was of a more severe character than had been suspected. Lastly, the abundant expectoration, and its puriform character, lead us to suspect the existence of acute phthysis, and so much the more readily, as we could not obtain from the patient any positive in-

formation respecting his previous condition. The autopsic examination proved, farthermore, the existence of granulous phthisis, and that some portions of the lungs had been already affected with inflammation. It is evident, from all the circumstances, that the disease of which Meunier died was, for the most part, situated in the pericardium, and that the phlegmasia was by no means propagated to the proper structure of the heart.

It is unfortunate, for the certainty and precision of diagnosis, as well as for the nosography, that we have not had more frequent opportunities of observing simple pericarditis, we mean distinct from every other disease. Happily, in most cases, the same treatment is proper both in pericarditis and those complications which obscure the diagnosis. The most common complications consist, in fact, of phlegmasia of the other organs, particularly of the pleura and lungs.

The following case offers an example of pericarditis, with inflammation, most probably, of the proper texture of the heart: it wants the details, because the patient was not seen until a long time after the origin of the disease, and when the symptoms, which would have enabled us to have recognised it, no longer existed.

Case LXVI.

Pericarditis, and perhaps Carditis.

A young man, about twenty-seven years of age, entered the hospital Cochin, leaving that of La Charite, where he had been treated, he said, for a catarrhal affection of the chest. Formerly of a strong

constitution and well formed, he was, at that time, very thin, and had a sallow and almost earthy complexion: his weakness was considerable; he still had dyspnœa, and the inferior limbs were infiltrated. We prescribed aperients, which the symptoms of abdominal irritation, after a while, obliged us to suspend. In the meantime the infiltration disappeared, the respiration became free; whilst the patient, whose appetite was voracious, wasted away by diarrhœa and abdominal pain. He died on the 20th of October, 1823, about six weeks after entrance.

Inspection of the Body.—The lungs rose-coloured, crepitant, perfectly healthy, adhered, on all sides, to the walls of the chest and the pericardium; the latter adhered to the heart at all points. There existed, between them, an albuminous exudation, of the consistence of the white of a boiled egg, yellowish, feebly united to the surface of the heart, from which we could tear it like any common false membrane, and of recent formation; but more adherent to the internal surface of the pericardium, to which it was held by cellular compact filaments. The heart buried, and, as it were, lost in the midst of this albuminous mass, the walls of which were more than three lines thick; the heart was very small, as if it had been atrophied by compression; its external surface was of a deep red, shaded with blackish tints: the finger, introduced into the left ventricle, filled nearly its whole capacity. This organ was softened, of a brownish tissue, and very easily torn.

There was no symptom which would enable us to recognise, or even suspect this disease. The patient no longer suffered; he had dyspnœa; his legs

were swollen; but to how many diseases do not these symptoms appertain? We should think that they depended upon a fluxion of the lungs passed to the chronic stage. In other respects, the patient was not examined with sufficient care, to enable us to establish, with certainty, any diagnosis.

Here, however, is a case of pericarditis, complicated with pleura-pneumonia.

Case LXVII.

Phlegmasia of the Pericardium, and, perhaps, even of the Texture of the Heart, Complicated with Peripneumonia.

Claude Vedte, baker, twenty-eight years of age, of a sanguine temperament, was taken, while at work, on the morning of the 8th of December, 1812, with a febrile chill, soon followed with a stitch in the side, below and on the outside of the left mamma. The pain obliged him to stop working, and he returned home, suffering, besides the symptoms indicated, difficulty of respiration, dry cough, cephalalgia, lassitude, anorexia, thirst and diarrhœa. The second day of the disease, after a rather calm night, same symptoms as yesterday, and, farthermore, a sense of burning below the trachea, especially during cough, which brought away viscous and tenacious sputa: impossibility of making a deep inspiration, and of lying on the side diseased. The third day, respiration very short; pain augments on pressure; pulse frequent, strong, rather hard; heat, dry, intense; mouth clammy; tongue slimy; no headach. (Bleeding morning and evening, expectorant and anodyne drink.) Evening. pulse less elevated, and able to lie on the left side.—

Fourth day, diminution of the pain of the side, difficult respiration, pulse continues hard and accelerated. (Six grains of ipecac.)—Neither stools nor vomiting. —Same state as in the evening.—Fifth day, face altered; pains under the sternum, especially at the left side; pulse much accelerated; urine very turbid; stools not frequent, but very liquid; can lie on the back; no pain in the head or the abdomen. Slight exacerbation in the evening; in the night copious perspiration. Sixth day, respiration somewhat less painful, pulse concentrated, much accelerated; heat of the skin, tongue very red at the point, whitish on its superior surface, thirst intense, desire for aliments. Seventh day, the patient says he has no pain in any part, that he suffers only some difficulty under the sternum, and that he feels very weak. Eighth day, face more altered; delirium in the night. Ninth, the chest gives a rather flat sound; the pulsations of the heart are imperceptible, the face is discoloured, the eyes sunken; the pulse is weak, unequal, very irregular; can lie on either side. (Twelve leeches to the chest; blister.)—Many evacuations in the day. In the evening, pulse intermittent, face animated, respiration almost stertorous, delirium in the early part of the night. The tenth day, sweating, towards morning *intestinal pulse well marked;* expectoration more liquid, drowsiness during the day; two liquid yellowish stools. In the evening exacerbation.—Night more calm. The eleventh day, copious perspiration, sputa more mucous and more opaque. Twelfth day, deep pain under the sternum; urine red, pulse very irregular in the evening.—Thirteenth day, weakness and irregularity of the pulse augmented, face alters

more and more; the patient much fatigued by lying a-bed, remained sitting up for two hours in the afternoon; sweating of the forehead. The fourteenth day, pulse slow and weak, inspiration very painful, left side of the chest gives, more or less, flat sound; cough frequent when he lies on that side. (Ten leeches, afterwards a blister to the side affected.)—Drowsiness, during the day.—Evening, pulse rather hard; desire for food. Night, loud snoring, mouth dry and clammy. Fifteenth day, face pale, much altered, hollowness of the cheeks, warm moisture, respiration interrupted with sobs; tongue earthy, red at the edges; abdomen tense, but not painful, œdema of the legs.—In the evening, pulse frequent, intermittent, concentrated. (Aperient and pectoral ptisan.) Night, sweating, and stertorous snoring. Sixteenth day, abdomen swollen, infiltration of the abdominal extremities, pulse feeble, intermittent. Seventeenth day, extreme prostration, pulse very unequal, very irregular, feeble and slow. In the evening, inquietude, pulse uncertain, leaping of the tendons; respiration very short and compressed, great thirst and heat, continual perspiration.—In the night involuntary dejections, great dryness of the mouth, drowsiness, with frequent watchings. Eighteenth day, colliquative sweats, convulsive motions of the alæ nasi.—Evening, pulse more equal, increased anxiety, sensation of excessive heat of the whole body, continual difficulty below the trachea; erysipelatous redness of the skin; no fixed pain; intense thirst; night, more disturbed than the preceding. Nineteenth day, inspiration stertorous, sweating, rattle—death, in full possession of his reason, at seven o'clock in the evening.

Inspection of the Body.—Body of a man very strong, five feet six inches; abdomen tense, and legs a little œdematous.—*Abdomen.*—Stomach and intestines untouched, distended by gas; liver yellow on its diaphragmatic surface, of a natural colour in the rest of its extent.—*Chest.*—Pericardium much distended, adhering to the cartilages of the ribs and sternum; in the cavity of this membranous sac, a pint of white, opaque, albuminous fluid, of a very fetid odour.—The heart, floating in the midst of this liquid, is covered over with albuminous concretions, dense, white, areolated, thickened by many lines, and easy to tear: the tissue of the heart is a little pale, and easy to break. Right lung depressed, evidently hepatised, of a reddish-brown, floating in half a pint of reddish turbid serum. Same liquid in the left side: corresponding lung hepatised, adhering to the diaphragm by some albuminous columns.

This case, stated with great precision, is distinguished from the preceding by a remarkable circumstance: the pulse was strong and hard at the commencement, whilst, in the simple pericarditis, it is small, contracted, and convulsive; but do not forget that the phlegmasia, in the present case, had first seized upon the lung to be afterwards propagated to the pericardium, and, perhaps, to the heart itself; then the pulse is, in fact, concentrated, and two days after the inflammation, tending to a fatal termination, we observe this insidious remission, so frequent in the phlegmasiæ of the serous-membranes.

If we take a rapid view of the preceding observations, we shall see that the principal symptoms which

characterize them, are, sharp, tearing, acute and pungent pain, dyspnœa and extreme anxiety, continual *jactitation*, small, contracted, frequent, convulsive pulse, contracted state of the face, with agitation, and even convulsive spasm of some of its muscles, and particularly of those which receive branches from the nerves, designated, in these latter times, by the name of *respiratory nerves of the face;* perfect inability of straitening and extending the body, which is bent forward; lastly, symptoms which announce an obstacle to the circulation, such as infiltration of the limbs, violent injection of the cheeks and lips: high fever, with burning dryness of the skin, accompanying the preceding symptoms, and complicated, sometimes, with delirium, more or less, developed. This collection of symptoms denotes, with tolerable certainty, a phlegmasia of the thoracic viscera; but several of them are common to pleurisy, to pleuropneumonia and pericarditis. Which are those, which specify the last? It seems to us, that these consist in a continual tendency to hypothymia, and jactitation; contracted, small, convulsive pulse; pain in the precordial region, with impossibility of maintaining the horizontal posture; in every instance we dare not affirm but that a pleurisy of the whole left pleura exists to produce the same phenomena. It is, therefore, impossible, from these symptoms, to trace the distinctive characters of these two diseases; the only mode, according to us, of avoiding all mistakes on this point, is to practise auscultation and percussion; but, in order to avoid superfluous repetitions, we shall not speak here of the differential signs furnished by

this method of exploration, and we shall refer the reader to what we have to say of the diagnosis of acute pericarditis.

We shall proceed to show the anatomical alterations, which characterize pericarditis in its first stage; it remains for us to examine, at present, what are those met with, when individuals do not die at this period. If we recollect the various changes which the matters, secreted by inflamed serous membranes, undergo, we shall readily be able to foresee those, which take place in those albuminous masses, and those false membranes, of more or less thickness, which we find in the pericardium when affected with inflammation. In fact, analogy informs us that this inflammatory production, endowed with a tendency to become organized, will become gradually thickened, permeated with red vessels, and transformed into cellular tissue, or even fibrous, fibro-cartilaginous, cartilaginous, or, it may be, osseous membrane. That which analogy leads us to foresee, observation, the source of all truth in medicine, fully confirms, as we shall have occasion to demonstrate in the following facts relative to chronic pericarditis.

SECTION II.

CASES OF CHRONIC PERICARDITIS.

Case LXVIII.

Chronic Pericarditis, with Cellular Adhesion of the Pericardium to the Heart, without Complication.

Jean Brousse, water-carrier, fifty-one years of age, of a sanguine temperament, was admitted to the hospital Cochin on the 20th of March, 1812. He had suffered for fifteen years, palpitations and difficulty of respiration, which had gradually increased; the horizontal position produced oppression and insupportable suffocation; he frequently awoke suddenly; the abdominal extremities were œdematous: all these symptoms were augmented for about a year, and, at the time of entering the hospital, the thoracic extremities were infiltrated: the extremities were frequently cold; the abdomen was voluminous, the complexion appeared of a deep red, the lips were livid, and the pulse almost imperceptible; the beatings of the heart offered some irregularity and intermittence, and it appeared that this organ suffered some obstacle to its motions. The precordial region gave an obscure sound; lying on the back was impossible; a frequent and rather violent cough, was followed by an expectoration of thick yellow sputa. Death supervened eighteen days after he entered the hospital.

Inspection of the Body.—The lungs were healthy, the pericardium adhered very closely to the whole surface of the heart: the texture of which was soft-

ened, a little thickened, and, perhaps, dilated. The chest did not contain serum. All the other viscera were healthy.

This is a rare example of pure and simple adhesion of the pericardium to the heart, which sent the patient to the grave. The general symptoms were very similar to those observed in most diseases of the heart, so that we could not obtain sufficient light to establish the diagnosis of these affections, or sufficient means to distinguish them from each other. Nevertheless, there is one symptom in this case which should not be overlooked, and that is the impediment which the heart seemed to sustain in its motions, as if the adhesions alluded to had produced some restraint.

Case LXIX.

Fibro-Cartilaginous, and somewhat Lardaceous Adhesion of the Pericardium of the Heart, &c.

Claude Prieur, aged 19, baker, of a lymphatic temperament, was admitted to the hospital Cochin the 7th of February, 1821. He was, at that time, affected with a scrofulous swelling of the great toe, and, soon after, the progress of the disease made it necessary to amputate this part; the consecutive wound cicatrized. In the mean time ulceration, kept up by the carious bones of the foot, soon appeared in different points of the skin; to this was added swelling, with suppuration of the inguinal glands of the right side; the abdomen became swollen and painful: we observed, from time to time, a little looseness, cough, and hectic fever, with exacerbation in the evening; the pulsations of the heart and the pulse

were regular, frequent, and of moderate force. All the means of relief were unavailing, and the patient, exhausted by a slow fever, died, in the last stage of marasmus, on the 8th of July, 1822, seventeen months after entrance.

Inspection of the Body, twenty-four Hours after Death.

The bones of the metatarsus were carious; the right inguinal glands* formed a tubercular mass, partly friable, and partly hard like cheese, and even like a half boiled chesnut. All the ganglions of the abdomen, of the mesentery, and the bronchi, presented a similar disorganization.

The *Abdominal Cavity* contains a large quantity of citrine-coloured serum: it is, as it were, separated into two distinct cavities, by the arch of the colon adhering to the anterior wall of the abdomen, and the neighbouring parts. The peritoneum, in the whole of its extent, offers a remarkable alteration, difficult to describe; it is strewed with granulations, smaller and more numerous, on the portion which covers the parietes, larger and more projecting on the viscera, where they are of a yellowish white, friable, about the size of a hemp-seed, and of a tubercular nature: the surface, from whence they arise, has some resemblance to the skin covered with confluent small-pox. The peritoneum, which appears thickened, is detached with great facility from the other intestinal membranes; and we find, by this means, its adhering surface perfectly united. The confluent granulations,

* There was no infiltration of the body: the crural vessels were perfectly healthy.

with which the parietal fold is, for the most part, covered, are of a whitish colour, mixed with red, surrounded with injected vessels, giving to the peritoneum the appearance of granite, which, besides the colours indicated, has a shade of bluish black.* This portion of the serous membrane is thicker than that which covers the intestines; it is of a fibrous consistence, and about half a line thick. The stomach, rose-coloured on the interior, is small, contracted, and almost hidden behind the liver and the transverse arch of the colon. The small intestine, in the whole of its course, is completely healthy; the mucous membrane of the large intestine is generally white, and entirely exempt from ulceration; this intestine contains solid fœcal matter. The liver adheres to the anterior surface of the abdomen by a false membrane almost fibrous.—The fibrous membrane of the spleen is much thickened. The bladder, distended by an enormous quantity of urine, has its mucous membrane perfectly white, whilst its serous membrane presents the granular alteration spoken of in its full intensity.

Cavity of the Chest.—In the right side, the pulmonary, costal, diaphragmatic, and pericardiac pluræ adhere to each other very closely, especially in the diaphragmatic region; several tubercles are met with behind the sternum. The left side contains a large quantity of citrine-coloured serum; the pericardium is disseminated with small, friable miliary granulations, somewhat resembling, at first sight, small syphilitic vegetations. The rest of the cavity of this membrane is wanting: the corresponding surfaces of the peri-

* This colour is owing to small melanic masses.

cardium adhere to each other by a compact cellular production. The portion which covers the heart, for the most part about a line thick, is much thicker on the posterior part of the organ; it grates under the knife; and such is its hardness that, to the touch, the heart is of a scirrhous consistence, especially at the back part. The walls of the two ventricles are thickened; the texture of their anterior part, firm and red coloured, differs materially from that of their posterior portion, which is less distinctly fibrous and fleshy, as if it had begun to partake of the lardacious disorganization of the pericardium. The lungs did not contain a single tubercle in their interior; they are perfectly crepitant: a single softened tubercle existed on the surface of the right. The bronchial ganglions, partly black, and partly whitish yellow, formed hard or already softened masses, as has been noticed above; the mucous membrane of the bronchi is rose coloured.

Cavity of the Cranium.—The brain has little consistence; the meninges are healthy; there exists a little serum at the base of the cranium and the cerebral ventricles.

Case LXX.

Carcinomatous Tumour in the Anterior Mediastinum—Induration of the Pericardium—Phlegmasia of the Pleura and Aorta.

The patient, named B——, 33 years of age, shoemaker, rather firmly constituted, formerly a soldier, had been affected with venereal disease, for which he had taken mercury, was admitted, the 25th of December, 1820, to the wards of the hospital Cochin,

having, behind the sternum, a tumour which he attributed the formation of to the nature of his occupation, which obliged him to make almost continual exertions, during which the sternal region was supported strongly against solid bodies, such as shoe lasts, &c. It was in 1814 that this tumour began to be developed, or, rather, that the patient suffered pains under the sternum so violent that he was obliged to abandon his occupation; his respiration became much embarrassed, and, on the least exertion, he became suffocated and faint. A physician, whom he consulted last year, applied some leeches, and a blister, behind the shoulders, and recommended frequent bleedings: these means relieved him. Nevertheless, towards the end of October, that year, he perceived that he had a pulsating tumour in the region of the sternum. His condition, on entering the hospital, was as follows: face pale, lips violet red, eyes dull and spiritless, dyspnœa; pulse small, rather regular, sleep very short, interrupted by frightful dreams; cough violent, followed by mucous sputa.—The pulsations of the substernal tumour, isochronous with those of the pulse, and tumultuous, seemed to be heard in almost the whole anterior part of the chest; pressure was painful, and occasioned the sternum to *yield;* the skin which covered the tumour had not changed colour, but was warmer than the remaining parts.

The day after his arrival, he complained of a stitch in the side, which he then felt for the first time: it corresponded to the posterior, lateral, right part of the chest, and was opposed by bleeding, which produced momentary relief, but it quickly reappeared,

and with even increased violence, on the following days. The patient had been in the hospital more than twenty days, when there suddenly supervened, in the night of the 14th of January, a trembling, which lasted about an hour, with cold sweats, oppression, fainting, and painful cough: the pulse had become small, frequent and irregular; the pulsations of the tumour, much less sensible, seemed to have augmented in extent; the face was dull, and cadaverous; the lips blue, and the thirst intense.

We were fearful of the rupture of an aneurismal tumour, and, consequently, the immediate death of the individual. Nevertheless, he was decidedly better the next day, his respiration becoming less embarrassed. But he incessantly complained of a pain in the side, which obliged him constantly to retain the same position. Leeches were applied to the part affected, which procured relief. It is remarkable, that there appeared, near the painful part, a tumour; which, in its progress, invaded the arm, forearm, and hand. The skin was quite tense. In the mean time, the symptoms became daily more alarming; and the patient, perfectly sensible of his situation, died on the 22d of January, about noon.

Inspection of the Body.—The sternum, and the cartilages of the true ribs, altered and softened, formed a portion of a lardacious, carcinomatous tumour, developed between the laminæ of the mediastinum, which it had affected throughout; so that not the least trace of it could be discovered. The pericardium itself, confounded with the tumour, which was remarkably thickened, adhered to the heart in its whole extent; the inferior part of the left pleura

was covered with a sero-purulent, whitish lamina; the portion of the lung in contact with the pericardium, altered in its texture, seemed to participate in the disease of the mediastinum; the left cavity of the chest, at its lower part, was the seat of a purulent effusion.

The heart had increased in volume; its right cavities were dilated; the walls of the left ventricle, the cavity of which was contracted, were thickened about an inch; the valves and columnæ offered nothing peculiar; the cellular membrane, which united the surface of the heart to the pericardium, was infiltrated. The aorta, externally, was perfectly healthy; its internal membrane offered, in many points, a deep red, which extended as far as the iliacs in one direction, and, in the other, as far as the axillary and external and internal carotids of each side: at the same time, the membrane appeared thickened, and easily separated from the middle membrane. The pulmonary artery appeared to be straightened, and its internal membrane was without redness. The abdominal organs were healthy.

Case LXXI.

Partial Ossifications and Adhesions of the Pericardium.—Peritonitis.

A commissioner, fifty-eight years of age, was affected with constant dyspnœa for eight years; and, whenever he went up stairs, or took more than ordinary exercise, was suddenly affected with suffocation, and obliged to stop. The face was swollen, and livid, the lips were of a violet colour: the pulse

small, frequent, irregular, and sometimes intermittent. We perceived a peculiar rushing murmur in the region of the heart. These symptoms, having been slowly developed, produced but little disquietude in the patient, who would take no medicine for his relief. In the mean time the disease continued to advance, and the legs began to be œdematous, which determined the patient to enter the hospital Cochin. To these phenomena may be added a flat sound, in the whole left side of the chest: the patient, farthermore, suffered, at intervals, increased intensity of the symptoms, or a kind of paroxysm, during which there was impending suffocation. The urine was diminished in quantity, and had a red sediment. We merely employed diuretics to remove the œdema and serous effusion, which the flat sound seemed to denote. The infiltration having been removed, and the sound having become sufficiently clear in the superior part of the chest, the patient believed himself able to leave the hospital; but a renewal of the symptoms quickly induced him to return, and he was again relieved by aperients. Two years were passed in this doubtful state; three months seldom elapsing without witnessing the patient's return to the hospital for assistance. In addition to the symptoms above mentioned, he was sometimes affected with pulmonary catarrh. His constitution, in the mean time, became every day weaker, and he entered the hospital, for the last time, on the 18th of August, 1809. The symptoms, collectively, were no longer the same: the body lost its fulness, and the livid appearance, and assumed the characters which announce painful chronic affections of the abdomen. The complexion

was yellow, and of a leaden hue; the cheeks sunken; the eyes dull; the features sharpened; the pulse retained its smallness and irregularity, but was weaker and softer; the dyspnœa was less violent; the thorax gave a clear sound in the whole of its extent: we could hardly perceive the beatings of the heart: the abdomen was tense, painful throughout, and seemed to contain a large quantity of fluid. There was constipation. Tonics, with aperients, formed the basis of the treatment, but no relief was obtained from them. Several days previously to death, which occurred on the 2d of September, delirium and diarrhœa supervened, with total loss of expression.

Inspection of the Body.—The head presented nothing peculiar.

There was no serum in the chest; the lungs were healthy; externally, the pericardium had contracted close adhesions with the left lung, and internally with the surface of the heart; it presented numerous ossifications, which had their seat between the serous and fibrous membrane on the one side, and the heart on the other. One of the most considerable of these ossifications, terminating in a point towards the apex of the heart, had perforated the pericardium, and given rise to the formation of a purulent deposite, of considerable extent, on the superior surface of the diaphragm. We observed another circular ossification, which formed a sort of coronet to the right auricle, situated between its texture and the serous fold which borders it. The heart was natural, excepting that its fibres were livid and flabby.

The peritoneum exhibited evident traces of phlegmasia. Masses of false membrane were observed

uniting together the viscera of the abdomen, the diaphragm and the abdominal parietes. After removing, with some difficulty, these numerous adhesions, we observed the internal circumvolutions united, anteriorly, in a kind of globe: here and there were immense abscesses, not communicating with each other, but containing, each of them, a grayish liquid. We shall not insist, here, on the coincidence between peritonitis and pericarditis: medical men have but too frequently had occasion to remark the facility with which the several divisions of the serous system communicate their diseases to each other. It is not uncommon to observe inflammation of the pleura, pericardium, peritoneum, and even the arachnoid membrane, affected at the same time. There is nothing in this coincidence which ought to surprise us; the various dependancies of the same tissue ought, in fact, to present the same relations and the same sympathies in disease which are observed in health. It has also been observed, that diseases, instead of disturbing the operations of the laws of sympathies, or rather instead of weakening their empire, give them new force and intensity: and, indeed, bring to light many sympathies, which, without their intervention, would probably never have been discovered.

ARTICLE II.

GENERAL HISTORY OF PERICARDITIS.

SECTION I.

ANATOMICAL CHARACTERS OF PERICARDITIS.

We shall treat successively, in this chapter, of pericarditis, and the matter which it secretes when in a state of more or less acute inflammation. The red and injected state of the pericardium indicates phlegmasia: thickening rarely takes place, or is but slightly marked. When it does occur, it may, most commonly, be attributed to a thickening produced by the organized false membranes, which closely adhere to the pericardium; the red colour is seldom general, but is more frequently limited; the membrane is sometimes strewed with numerous red points in groups, which give it a speckled or dotted appearance; at other times, speckled plicæ are observed, of more or less extent, and more or less numerous; the injected state is generally proportionate to the redness. In some cases, however, it may be said that the red colour is uniform, resembling a species of *tincture*, and is independent of vascular injection.

Sub-acute pericarditis is said to have been observed with hardly any trace either of redness or injection; but more or less intense injection and development of reticulated vessels, have been constantly observed in chronic pericarditis.

The matter secreted by the pericardium in a state of inflammation consists of two parts; the one con-

crete, the other liquid: the portion which is concrete constitutes the false membranes. The concrete and the liquid portion exist in extremely variable proportions, according to the degree of inflammation, and, undoubtedly, according to other circumstances as yet but little known. The liquid, or serous portion, ordinarily mixed with albuminous flocculi, is turbid, rarely entirely limpid, of a citrine-greenish, reddish brown, or lactescent colour; sometimes the fluid appears curdled. The quantity may amount to several pounds. At other times the quantity is very small, and the concrete matter extremely abundant, with scarcely any serum. In those cases where it is found in very large quantity, the pericardium is much distended, and forms an immense fluctuating pouch.

The false membranes of an albuminous nature, the moment they are exhaled, are formed into amorphous masses of various sizes, which afterwards enlarge, and extend over the surface of the pericardium, so as either wholly or partially to cover it, and thus reciprocally unite its corresponding portions. They frequently form, also, successive layers; and their surface is sometimes unequal and rough. At other times they form alveolar depressions, or separate cells, resembling pieces of sponge. These are, probably, the analogous false membranes, the external arrangement of which Corvisart compares to the internal surface of the reticulum, or second stomach of the calf.*

* See page 19, of his work, 3rd edition. In the seventy-fifth case, the pseudo-membranous concretions resembled fungous vegetations; and some of them were cut in the form of a cock's comb.

In some cases the false membrane is so intimately combined with the serum, that the fluid resulting from the mixture appears to be wholly purulent. Should the pericarditis pass into the chronic state, and a cure be effected, the false membrane passes through a series of changes, which we shall presently notice.

Absorption gradually invades all that is susceptible of being removed by it, and the portion which remains becomes thickened, and unites or agglutinates the contiguous surfaces of the membranes. Meanwhile, red points and lines, and afterwards reticulated vascular patches appear in these accidental productions, which are soon converted into serous laminæ, or cellular tissue, which afterwards form the general or partial adhesions of the pericardium.

The adhesion may be more or less close and compact: sometimes it is difficult to separate it, except by a cutting instrument. Similar adhesions have led to the belief that the pericardium was deficient. It was only in the infancy of the art that the laminæ, or cellular filaments uniting together, that a portion of the serous membrane covering the heart, and that reflected on its fibrous envelope, were mistaken for hair.

The substance of false membrane may not only be converted into cellular tissue, but we have seen it organized in the form of fibro-cartilaginous, cartilaginous, and even osseous tissue, of which we have already given several examples. These accidental tissues may exist, in greater or less quantity, and may even exist with adhesions purely cellular.

At other times, we find nothing more than white

or milky plicæ on the surface of the heart. They vary in form and extent, and, in general, are easily detached. They are rarely very thick. The pericardium, below them, is injected without being thickened. The whitish spots are traces of partial pericarditis.

Finally, in other cases, the exuded organized matter forms small masses, which become organized into vegetations of a rounded form, or even tubercular granulations. These tubercles, disseminated on the surface of the heart, break down like boiled albumen, are easily detached, and resemble certain vegetations, or pustules of the valves.

The muscular substance of the heart often remains perfectly free from disease; at other times we find it redder or brown, pale, yellow, softened, and easily torn. In these cases, it appears to have participated in the inflammation.

In some cases the effusion produces the same effect on the heart, which it commonly does on the lungs; that is, compresses, diminishes, or atrophies it.

II.—OF THE SYMPTOMS AND DIAGNOSIS OF PERICARDITIS.

SECTION I.

SYMPTOMS OF ACUTE PERICARDITIS.

The diagnosis of acute pericarditis is rather difficult: this seems to depend upon the circumstance

that it is always complicated with some other thoracic phlegmasia, or on the fact that its symptoms are sometimes scarcely to be observed. The symptoms which we have noticed are the following: Fever, more or less intense, with a dry skin; sharp, acute, lancinating pain in the precordial region; sensation of burning heat in the same situation; incapability of straightening the corresponding side of the chest, and of lying in the horizontal position; irregular and feeble contractions of the heart; very great anxiety, with distortion of features; swooning; continual jactitation, with terror and despair; small, frequent, contracted, unequal, irregular, intermittent and almost convulsive pulse; dyspnœa; cold sweat at intervals, and, at a later period, phenomena which announce an obstacle to the circulation, such as lividity, swelling, injection of the face, and œdema of the limbs.

But we do not observe, in every case of pericarditis, all the phenomena we have mentioned. When this is the case, the physician ought to redouble his attention, to enable him to form a diagnosis founded on the number of symptoms which remain.

The disease which may most easily be confounded with pericarditis is pleurisy. There is, however, a characteristic sign which enables us to distinguish it; namely, egophony: this phenomenon is never observed in pericarditis; it is peculiar to pleurisy.

If, in all cases, we were to confound acute pericarditis with pleurisy, the error would be of little consequence, the treatment of both diseases being essentially the same.

As yet auscultation has not furnished any sign by

which we can recognise acute pericarditis, unless we choose to consider as such *the sound of new leather*, noticed by M. Collin, author of a treatise on the different methods of exploring the chest.

SECTION II.

SYMPTOMS AND DIAGNOSIS OF CHRONIC PERICARDITIS.

The symptoms of chronic pericarditis are much more obscure than those of acute pericarditis. "Not unfrequently," says M. Laennec, "I have found the pericardium full of pus, in fact, in a state of chronic inflammation, without any thing to lead me to suspect such an affection in these subjects."* "I have not unfrequently met with this disease, and I have always found the diagnosis difficult, and sometimes even obscure," says Corvisart.† The symptoms of chronic pericarditis, are, for the most part, the same as those of the acute, excepting that they are somewhat less distinct. Lastly, when the disease terminates by adhesion, by the formation of adventitious membranes of cartilage or bone, it may happen that such a termination does not give rise to any disturbance of function, and then it is quite impossible to form any diagnosis; or even that the same termination develops symptoms which announce an embarrassment of the circulation, and then the physician

* De l'Auscult. tom. ii. page 392.

† Essai sur les Maladies du Cœur, page 30, 3d edit.

will make every effort to endeavour to determine the cause to which he ought to refer the disturbance of the circulation; and, notwithstanding all his endeavours, if he cannot arrive at it, he will act according to the indications furnished by the symptoms.

We shall here speak of a new symptom, by means of which Dr. Sander has been enabled to ascertain the adhesion of the pericardium to the heart: it consists of a long-continued, strong, undulatory movement, to be discovered lower down than that ordinarily discovered in the region of the heart. M. Sander has explained this kind of motion as follows: "During the simultaneous contraction of the ventricles the apex of the heart is carried upward in front, toward the fifth rib; and, consequently, draws upward the inferior portion of the pericardium with the diaphragm, and every thing adhering to it: at the same time, a depression under the left ribs of the superior region of the abdomen is obstructed. Immediately afterwards, the ventricles relaxing dilate to receive the blood, the apex of the heart moving suddenly downward; and, not having free space to move in, communicates to the adhering pericardium, the diaphragm, and other parts, the shock, which becomes sensible, exteriorly, by a slight elevation, discovered in the situation where but a moment before the depression had formed, but which, however, extends a little lower down. Strictly speaking, the depression precedes the shock; since the contraction of the auricles is the commencement of the action of the heart. Thus," adds Dr. Sander, "notwithstanding what Corvisart has said, there exists a mechanical sign which will never deceive, which enables us

to recognise with great facility adhesions of the pericardium, even when they are complicated with other diseases of the heart or the chest.

III.—OF THE CAUSES OF PERICARDITIS.

The causes of this phlegmasia are evidently those common to the other phlegmasiæ in general; blows, falls on the precordial region, immoderate exercise, suppression of transpiration, such as usually takes place on exposure to the air while in a state of perspiration, imprudent use of cold drinks in similar circumstances, abuse of irritating ingesta, retrocession of exanthems, rheumatic or gouty affections, &c. These causes will be so much the more efficient, in proportion as they act on individuals of a robust, sanguine, and, at the same time, irritable temperament.

IV.—PROGNOSIS.

Sub-acute pericarditis is a disease of extreme severity, taking into view the importance of the functions of the organ whose envelope is affected. Nevertheless, we ought not to regard it, with Corvisart, as necessarily mortal: it may yield to bleeding, properly directed. Sub-acute, or chronic pericarditis, is not so immediately dangerous: in every instance, it may involve the most disastrous consequences, if the treatment be neglected, or improperly managed.

What shall we here say of the danger which may

result from the various accidental tissues which may be produced by pericarditis? What is there which has not been written on the adhesion of the pericardium? Some have regarded it as a source of severe accidents; others have adopted the contrary opinion. Morgagni has discussed, at length, the question whether this adhesion determines palpitations. It would appear, at first sight, that such a lesion would disturb the regular motions of the diaphragm; and that, on the contrary, the contractions of the diaphragm would disturb the motions of the heart. Perhaps these effects actually occur in some instances; but it is also very certain that we find adhesions of the pericardium complete in some individuals, in whom the circulation and respiration had not sustained the least embarrassment. It is, at least, sufficient that we are apprized of the extreme danger which some of them have attributed to it.

V.—TREATMENT OF PERICARDITIS.

The treatment consists in the employment of antiphlogistics, in the first rank of which we place bleeding. General and local bleeding may be useful: general bleeding, in cases of powerful reaction, promotes effectually the action of local bleeding, which it ought to precede. We can seldom fix on the quantity of blood necessary to be taken: this will depend on the intensity of the disease, the age, strength, and sex of the subject. In general, we should not hesitate to apply a large number of leeches at once; and repeat the application, should it be necessary. In an adult,

we may employ at once thirty, or even forty. The effect of the bleeding should be favoured by the most rigorous diet, diluent, refreshing, and demulcent drinks, and perfect rest.

When the phlegmasia occurs under a slow, inactive, and chronic form, we should recur to the use of revellents and exutories; such as blisters, cauteries, setons, and even moxas: in short, we should neglect none of those means which are appropriate in other inflammations.

CHAPTER II.

OF HYDRO AND PNEUMO-PERICARDITIS.

These two affections are less frequently true diseases than symptoms of some other disease, either of the heart, or of the lungs. Since the more exact researches on the inflammations have taught us the connexions which exist between them and the effusions of the serous membranes, we find but very few idiopathic dropsies. We cannot, however, deny their existence. We shall begin by relating two cases of this kind, relative to dropsy of the pericardium: we shall afterwards give a general history of this affection.

I.—PARTICULAR CASES.

Case LXXII.

Idiopathic Hydro-Pericarditis, or, Hydro-Pericarditis without any Organic Lesion.

A washerwoman, named Laroche, twenty-five years of age, was admitted into the hospital Cochin the 20th of September, 1810. She had suffered, for four months, great difficulty of respiration, violent pulsations of the heart, and giddiness: the pulse was fre-

quent; slight accession of fever appeared at night; symptoms of gastric embarrassment occurred in connexion with that state from the time she entered the hospital. This disease, which at first presented nothing very alarming, suddenly assumed a very severe character, and the woman died three days after admission.

On opening the body, we found about sixteen ounces of citrine-coloured serum in the pericardium. The heart, and all the other viscera, were in their natural state.

Case LXXIII.

Hydro-Pericarditis, without Organic Lesion.

Mousanas, aged nineteen years, having enjoyed but feeble health, had perceived, that, for six weeks past, without any known cause, his legs had swelled from day to day. Having entered the Cochin hospital, the 11th of July, 1809, he presented the following symptoms:—Face pale and swollen; skin hot and dry; urine small in quantity; respiration tolerably free; flat sound in the right side of the chest; pulsations of the heart frequent, and observed through a great extent; pulse small, quick, and frequent; the patient had altered in appearance, but retained some appetite. Notwithstanding the application of leeches to the anus, aperients and anodynes, the patient grew weaker every day, and died on the 23d of the same month.

The pericardium contained about a pound and a half of clear serum; the heart was in the natural state. The right lung adhered, in the whole of its extent, with the pleura costalis. All the other viscera were

healthy. We could not justly attribute death, in these cases, to any thing else than hydro-pericarditis. There is no mention made of any other lesion which could have produced such a fatal termination. Examples of such simple forms of hydro-pericarditis must be exceedingly rare.

II.—GENERAL HISTORY OF HYDRO-PERICARDITIS AND PNEUMO-PERICARDITIS.

SECTION I.

The effusion of a more or less considerable quantity of serum into the pericardium, constitutes hydro-pericarditis. It is seldom that this species of dropsy is primitive: most frequently, it is a consequence of some obstacle to the circulation; but whether it be primitive or consecutive, we should be very careful not to confound it with the effusion produced by pericarditis.

SECTION II.

The serum effused into the pericardium varies in quantity, colour, and also, perhaps, in the chemical elements of which it is composed. Sometimes we only find a few ounces of fluid; at other times, several pounds. Corvisart speaks of a case of hydro-pericarditis, in which there were eight pounds of fluid:* the cases of this kind are not very common. The fluid is sometimes entirely colourless, and perfectly

* Ouv. cit. page 53.

limpid: at other times, it is more or less coloured, greenish or yellowish, and rendered slightly turbid by flocculi or membranous fragments, analagous to spiders' web, floating in the midst of it. It resembles, in some cases, a beautiful solution of the salts of gold.

Sometimes, instead of a liquid purely serous, we meet with a fluid mixed with a certain quantity of blood, red, or even black.

The pericardium does not offer any alteration, excepting that it is distended in proportion to the quantity of liquid which it contains. It seems that it is whiter than in the natural state, as if it had been washed, as it were, by the serum in the midst of which it floats. This white colour is more particularly noticed on the heart: as to the texture itself, it is perfectly healthy. We may conceive, that a very considerable effusion might at length compress the heart, diminish or even *atrophy* its substance.

It is not uncommon to meet with a certain quantity of air in the pericardium: hence, we have given to this disease the name of pneumo-pericarditis. The quantity varies much; its chemical properties are, as yet, unknown: it escapes with a slight hissing sound, when we cut into the pericardium. Pneumo-pericarditis exists, ordinarily, in connexion with hydro-pericarditis. It may, however, be barely possible that the pericardium contains only a certain quantity of air.

We will remark, before terminating what concerns the anatomy of hydro-pericarditis, that we should not regard as true cases of hydro-pericarditis, all the serous effusions which we meet with in the pericardi-

um. It is very uncommon, on opening subjects, not to find a certain quantity of serum in the pericardium. That hydro-pericarditis should really exist, it is necessary that the quantity of liquid should be at least six or seven ounces:* when the quantity effused is less than that, for example only a few spoonsful, it is extremely probable that the fluid has been effused in the last moments of life, and that the effusion was the effect of the agony.

SECTION III.

The symptoms of hydro-pericarditis have been, for a long time, the subject of discussion among physicians. The symptoms which some of them have regarded as pathognomonic, are scarcely worthy, according to the judicious remark of Morgagni, of even being mentioned among the equivocal symptoms of that disease. Lancisi, and several others, reckon among the most certain signs of hydro-pericarditis, the sense of great weight in the region of the heart. Reimann and Saxonia say, that the patients feel as if their hearts were inundated with water. Senac has observed, in the intervals between the third, fourth, and fifth ribs, a fluctuation of the fluid effused in the pericardium. Corvisart has not seen exactly the same phenomenon, but he is convinced of its existence by the impression conveyed to the hand. Nevertheless, Corvisart thinks it not unlikely that the undulations which he had felt by the hand in one patient, were merely produced by the pulsations of the heart. The other signs of hydro-pericarditis, ac-

* According to Corvisart.

cording to the same author, are the following:*— "Patients affected with hydro-pericarditis usually exhibit a countenance of a violet colour, with black and livid lips. They experience painful anxiety and distressing weight about the region of the heart; difficult respiration, which threatens suffocation when in the horizontal posture. They are affected with syncope, and less frequently with palpitations: the pulse is small, weak, frequent, concentrated, and at the same time irregular. On applying the hand over the region of the heart, tumultuous and obscure pulsations are felt, as if they were conveyed through a soft substance, or rather fluid, situated between the heart and the walls of the thorax. The precordial region gives a flat sound. In some cases, this part of the chest is more elevated, round, or bulging than elsewhere. When the disease is of long standing, œdema of the lower extremities supervenes, and, more rarely, slight puffiness of the anterior left portion of the chest: the pulsations of the heart are felt sometimes at the right, sometimes at the left, in various points of a circle, of considerable extent.

Many of the symptoms mentioned by Corvisart are, evidently, common to several other diseases, and, consequently, are either equivocal or doubtful: as to those which seem to be peculiar to hydro-pericarditis, it is highly necessary that they should present every desirable certainty. We meet with symptoms, also, different from those stated by Corvisart: unfortunately, auscultation has not, as yet, furnished any symptoms calculated to elucidate the diagnosis of pericarditis.

* Ouv. cit. page 50.

That which ought to console us for the obscurity which envelops the diagnosis, is, that hydro-pericarditis is almost constantly consecutive; and that, consequently, the essential point is to be able to recognise the principal disease.

The symptoms of pneumo-pericarditis have not been very well understood: the undulation and fluctuation spoken of by Senac and Corvisart may be observed in the cases of pneumo-pericarditis as well as hydro-pericarditis. In a subject, whose pericardium contained about a pint of serum, and a globe of air about as large as an egg, M. Laennec heard a very distinct sound of fluctuation determined by the contraction of the heart and strong inspiration.

Greater resonance of the precordial region would be a symptom, undoubtedly, insufficient to announce simple pneumo-pericarditis.

The treatment of hydro-pericarditis should vary, according as the disease is either primitive or secondary: in the latter case we should direct our principal means against the essential disease; in the first case, which is happily very rare, we should employ all the internal remedies, which would be proper in dropsy generally. If these means do not succeed, some authors advise that the fluid contained in the pericardium should be evacuated by a surgical operation; but the proper method by which this should be done, has not been agreed upon by physicians. Senac proposes puncture between the cartilages of the ribs, others prefer to make an incision, as has been twice done by Desault, between the cartilages of the sixth and seventh ribs. M. Laennec does not approve of either of these processes, and thinks that

it would be much better to trepan the sternum above the xiphoid cartilage. This operation is attended with little danger, is of easy execution, and would permit us to see, and even touch the naked pericardium, and verify the diagnosis before opening this membranous sac; an advantage which is not to be despised when we reflect, that it has happened to Desault himself to practise the operation in cases where hydro-pericarditis did not really exist, but merely a partial hydro-thorax.

SECTION II.

DISEASES OF THE MUSCULAR SUBSTANCE OF THE HEART.

CHAPTER II.

OF HYPERTROPHY, OR NUTRIENT IRRITATION OF THE HEART.

PRELIMINARY CONSIDERATIONS.

The word hypertrophy is derived from the Greek, (υπερ, *super* and τροφη, *nutritio*,) and signifies an augmentation of nutrition. According to MM. H. Cloquet* and Cruvelhier,† when this increase of nutrition affects the heart, it constitutes the *active aneurism* of that organ, whence we may perceive that these authors, as well as other physicians, have confounded, until the present time, two things, independent of

* See, for farther details relative to the treatment of hydro-pericarditis by puncture, the article on pericarditis in the *Dictionnaire des Sciences Medicales*, (this article is by M. Merat.) M. Richerand has proposed injections slightly irritating after the puncture, as is commonly practised in hydrocele: but this method would be too dangerous.

† Anat. Patholog.

each other, namely, hypertrophy and dilatation of the heart. Since 1811, in a memoir, which we read to the Institute, we demonstrated, by facts, that dilatation does not constantly accompany thickening of the walls of the heart; that this thickening may take place while the cavity preserves its natural capacity; that even hypertrophy may coincide with a contracted cavity, as if it had taken place at the expense of the last. The expression, active aneurism, then, so far as it denotes an increase of nutrition, a *hypertrophy* of the heart, is totally incorrect; since it carries with it the idea of *dilatation*, and since the hypertrophy may exist not only without dilatation, but even with a diminution of the cavity. The numerous facts we have collected obliged us to abandon the classification of Corvisart, and to distinguish three distinct varieties of hypertrophy of the heart.

In the first variety, the parietes of one or more of the cavities of the heart are thickened, without any augmentation or diminution of the size of the cavities; this is what we call *simple hypertrophy*. In the second variety, the walls are increased in thickness, and the cavity enlarged: this is the active aneurism of Corvisart: we shall give to this the name of *eccentric hypertrophy*. In the third form, the cavity is contracted at the same time that the parietes are increased in thickness: this is the *concentric hypertrophy*.

Finally, we understand, with some modern physicians, by the term *hypertrophy* of the heart, a fleshy muscular thickening of the walls of one or more of the cavities, or even of all the cavities of that organ, whatever may be its size in other respects.

Senac and Morgagni, in the last century, have well described the existence of this augmented nutrition; but they always connected the idea of dilatation with that of thickening, in their examination of anatomical facts, as well as in the theory which they endeavoured to establish. Lancisi has committed the same error, as well as another, not less important one. In fact, far from thinking, like Morgagni and Senac, that the thickening increases the force of the heart's action, and constitutes the augmented nutrition, he compares it to *the engorgement and augmented volume, produced by the obstruction and stagnation of fluids in other viscera; an opinion* which M. Portal attempted, some time after, to revive.

Although Morgagni has never separated, in his mind, the idea of *hypertrophy*, from that of dilatation of the heart, we find, notwithstanding, in his immortal work, an example of simple hypertrophy, with a natural state of the cavity, the walls of which were thickened. He says, positively, elsewhere, that hypertrophy consists of augmented muscular substance of the heart, (*præternaturale carnis musculosæ augmentum,*) and that it cannot be attributed to any defect of the fluids, (*vitio fluidorum,*) as Lancisi supposed.

Corvisart, following in the same track with Morgagni, rendered a great service to medicine, by recalling the attention of French physicians to diseases which had been, perhaps, too much neglected. He did not consider, it is true, that dilatation, with thickening and tenuity, had been already noticed in the works of his predecessors, and he distinguishes them by the name of *active and passive aneurisms*. Hypertrophy, with-

out augmentation, and even with diminution of the cavities, did not attract his attention, although he had once seen *simple hypertrophy*, as we may perceive, at the 335th page of the third edition of his work, where he speaks of a patient affected with aneurism of the aorta.

"The walls of the left ventricle," says he, "without being dilated, were much thicker and stronger than common; and," adds he, "this increased force of the left ventricle, explains how the curvature of the aorta, which had received the full force of the blood from the ventricle, too strong to yield, had undergone a dilatation, which the heart had opposed."

This remark recalls an observation of Morgagni: *Ventriculus dexter caveam quidem secundum naturam, sed crassissimas parietes habebat.*—(EPIST. xvii. ART. 21.)

Bruserius has made similar observations, if we may rely upon the following passage of his Institutions of Medicine: "Interdum moles tantum cordis ipsa videtur aucta, quin tamen justo major cavearum amplitudo dici possit."

It is evident that these authors, and Corvisart, in particular, had only one step farther to make to include this form of hypertrophy in the general theory of the diseases of the heart. Undoubtedly, every one has been surprised on opening bodies, to observe extraordinary thickening of the left ventricle of the heart, without any other change of capacity; but for want of observations sufficiently numerous and precise, anatomists have been contented to notice the fact, without drawing any inference from it.

At the period when we began to observe this kind

of hypertrophy, in persons who had presented some of the general symptoms of diseases of the heart, we had already pointed out its influence in apoplexy, but not its characteristic signs; and we, farthermore, could not habituate ourselves to the idea of separating this hypertrophy from the dilatation so frequently connected with it: the term *active aneurism* always seemed, to us, to be the most proper expression.

The individuals in whom we observed *simple hypertrophy*, were exempt from any complication of softening of the heart's texture, and presented us with the same symptoms as those which Corvisart attributes to active aneurism. From this we ought to conclude that the vibration of the pulse, the violent and sudden pulsations of the heart, which Senac, Morgagni and Corvisart had observed, in cases of active aneurism, could, by no means, be peculiar to any one species of dilatation of the heart, and that we ought not to attribute them to any thing but an excess of energy of the parietes proportionate to the hypertrophy, whatever may have been, in other respects, the state of the cavities; the excess of energy is sometimes such as to produce active hemorrhages of various kinds, and, among others, apoplexy.

Such was the state of medical science, on this point of anatomy, in 1811, when, on the 8th of August, we presented to the Institute a memoir on the subject, which was reported by M. Corvisart. The simple hypertrophy of the parietes of one or more cavities of the heart, is, for the most part, rather a morbid than an organic lesion. It is not mortal of itself, but becomes so in consequence of the affections it produces, and which it determines or com-

plicates; but it is quite necessary that it should exist frequently, and for a long time, in a state of simplicity. Sometimes it is accompanied with a dilatation of the cavities in which it is situated, sometimes with a cartilaginous or osseous degeneration of the valves or vegetations of these parts, &c. We may easily conceive that the diagnosis of hypertrophy is much more uncertain in proportion to its complication with a greater number of lesions. This remark is of great importance, and imposes on all those who may hereafter occupy themselves with the diseases of the heart, the law of imitating the wise reserve of Morgagni; otherwise we might, it is true, present brilliant pictures and expositions, which, however, would never stand the test of severe analysis, and which would be contradicted by the very facts from which they had been composed.

It is indispensable, therefore, to take into account all the complications; to proceed from the simple to the complex, and to have always present in the mind, the wise reflection of Michelotti: "*Cavendum est, ubi plura simul vitia deprehenduntur, ne sine certa ratione, unum aliquod, potessimum pro morbi causa proponantur.*"

It is much to be desired that in treating of the several diseases of the heart, we might begin with those cases in which this lesion only is found; but the intimate relation which subsists between the different parts of the heart, and between that organ and many others, the lungs, in particular, explains, sufficiently, why such cases are very seldom found.

We shall begin, nevertheless, with the most simple facts, and present several examples, successively,

of the three forms of hypertrophy which affect the several cavities of the heart, collectively or individually. Afterwards, we shall bring together the results of the several cases for the purpose of forming a general history of hypertrophy.

ARTICLE I.

CASES OF HYPERTROPHY OF THE HEART.

SECTION I.

CASES OF HYPERTROPHY OF THE LEFT VENTRICLE.

I.—SIMPLE HYPERTROPHY.

CASE LXXIV.

Pulsations of the Heart, Strong, Concentrated, and dull; Apoplexy—Simple Hypertrophy of the Left Ventricle; Effusion of Blood in the Ventricles of the Brain.

François Pechard, sixty-five years of age, paver, having a large and short neck, of a sanguine temperament, middling stature, and strong constitution, of a mild and tranquil character, had been subject, for four or five years, to headachs and giddiness, sometimes followed by momentary loss of sense: these accidents were ordinarily relieved by free bleeding from the nose. For several days this man suffered

more distressing vertigo than usual, and was waiting until an epistaxis should happily relieve him, when, on the 13th of September, 1822, while he was at work with his companions, he fell down, suddenly, deprived of sense. He was carried to the hospital Cochin, where we examined him at ten o'clock in the evening. He was lying on the back, and immoveable; he had vomited a greenish bile, and passed his feces in bed: his face was injected, his head inclined to the right, and the mouth was turned to the same side; the right pupil was more dilated than the left; we observed a total loss of consciousness, sensation and voluntary motion; the right extremities were affected with *automatic spasms*, but the left, when raised and left to their own weight, fell like inert bodies; respiration was alternately slow and stertorous; pulse full, strong, superficial, and rather frequent; the pulsations of the heart, and particularly of the left ventricle, were strong, concentrated, and heavy.

Diagnosis.—Hypertrophy of the left ventricle; cerebral hemorrhage.—(The patient was immediately bled xvi℥, and synapisms applied to the feet.) 14th, Nine o'clock in the morning, little amendment, some convulsive movements of the left arm, intermittence and irregularity of the pulse. (Bled xii℥. x grs. tart. ant. for a draught, to be taken a table spoonful every hour.) During the day the following circumstances were observed: Difficulty of deglutition, continuation of *intermittent stertor;* the left arm more paralyzed; when pinched made a slight movement to draw away, the lids, the globe of the eye, the eyebrow and alæ of the nose, especially the right, are agitated by convulsive motions; the patient moves the lower

jaw as if he were *ruminating;* the chest seems to dilate entirely from the contraction of the diaphragm; no vomiting; borborygmus, hiccup, involuntary dejections, general perspiration. At ten o'clock in the evening, pulse more irregular, and slow; deglutition more laborious, paralysis of the limbs complete. Morning of the 15th, stertorous snoring continued, but less noisy, strabismus, rolling of the eyes, convulsive motions of the alæ nasi, no appearance of either sensation or motion. (Same draught, twenty leeches to each temple, blisters to the legs.) In the evening, face pale and livid, sweating, alternate suspension of respiration and stertor; pulse *small* and very unequal, dejections involuntary, no vomiting—Death at 8 o'clock.

Inspection of the Body, twelve hours after death.

Body that of a man robust and well-formed; face pale, not swollen; lungs voluminous, very crepitant, adhering, and but little swollen in the most dependent parts. Heart of a rounded form, and one quarter or more larger than the fist of the subject. The augmentation of volume is to be attributed, exclusively, to the hypertrophy of the left ventricle, which seems to form the whole heart, and the parietes of which, at the middle part, seem to be about fourteen lines in thickness: this diminishes towards the superior part, and, also, a little towards the base: the fleshy columns are much enlarged; the cavity of the ventricle is evidently of its natural size. The right ventricle appears to be only a kind of appendix to the left. The ventricular septum, hypertrophied in the same proportion as the left ventricle, seems to belong

to it exclusively. The two auricles are thickened, the right is larger than the left. The texture of the heart is red, strong, and of a cherry hue. The orifices and their valves are in the natural state. The left coronary artery is considerably larger than the right. The aorta, dilated at its origin, puckered and bunched on the exterior, contains clots of blood. Its internal surface is yellow, rugose, ulcerated, covered with plicæ, some of which are cartilaginous, while the rest are *ossified* and thin, resembling egg-shells. The surface of the ulcers is red; the arterial texture about them is friable, and, as it were, earthy, affecting both the internal and middle coat. The parietes of the aorta, thickened throughout their whole extent, produce a grating noise on division; they react, however, with sufficient strength when the finger is introduced into the cavity of the artery. The vessels of the cellular membrane are very numerous, red and somewhat injected. The *fibrinous* coat, in which several of the osseous plicæ, above mentioned, are apparently situated, is easily separated from the others. The arteries, which arise immediately from the aorta, those of the base of the cranium and their ramifications, the ophthalmic, are equally incrusted with cartilaginous, calcarious or chalky laminæ. The abdominal organs are in the following state: The circumvolutions of the small intestines are contracted; they, nevertheless, contain bile, as well as the stomach. The mucous membrane of the latter is generally red: its rugæ are very large and of a beautiful rose colour; the mucous membrane of the small intestine is generally pale. The mucous membrane of the large intestine presents a greenish ground, which are traced on arborescent figures; of a rose colour, or still deeper

tint. The liver is swollen with blood. The gall bladder is filled with black bile. The bladder, distended with urine, rises considerably above the pubis. The sinuses of the dura mater are swollen with blood; the meninges are considerably infiltrated, especially toward the cerebral depressions. The lateral ventricles are dilated by a great quantity of fluid blood; however, the effusion is more considerable in the right ventricle than in the left; their septum is torn. The cerebral substance is firm and dotted with blood.

In the case of hypertrophy, which we had discovered by auscultation, it is worthy of notice that there was not that lividity of face, that capillary distention, that infiltration, those paroxysms of suffocation, which authors regard as inseparable from what they call aneurism, or, indefinitely, hypertrophy of the heart. In fact, these symptoms do not appertain to hypertrophy, and indicate, on the contrary, an obstacle to the circulation. Now, in the present case, there was not only no obstacle to the course of the blood, but the movement and impulse communicated to the blood were so active and impetuous, that hemorrhage took place in consequence of it, during one of which the patient died.

We shall see the same accident repeated in the following cases.

Case LXXV.

Hypertrophy of the Left Ventricle, without Dilatation of its Cavity; Cerebral Hemorrhage.

A joiner, named Hassenpatz, forty-five years of age, of a strong constitution, admitted to the hospital Cochin the 15th of February, 1810, had been for three

years affected with great difficulty of respiration, and rather frequent palpitations. On entering, his face was red, and, as it were, injected; the pulsations of the heart were violent, but regular and circumscribed; the pulse was also regular and vibrating.—Percussion gave only a flat sound in the region of the heart.

Two days after his admission, this man was attacked suddenly with hemiplegia of the whole left side, with paralysis of the upper lid of the same side, and difficulty of speaking.

Bleeding, another means appropriate in such cases, subdued these accidents. Speech became more free, the motions of the upper lid began to be re-established; but, on the 23d of February, a new apoplectic attack suddenly occurred, and carried off the patient.

Inspection of the Body.—We found the sinuses distended with blood, and a large quantity of this fluid effused into the lateral right ventricle, and into the substance of the hemisphere of the same side.

The parietes of the left ventricle of the heart were much thicker than in the natural state, without its cavity having been either augmented or diminished in extent.

The two auricles and the right ventricle, as well as the several orifices and their valves presented nothing extraordinary.

The other viscera were healthy.

Case LXXVI.

Simple Hypertrophy of the Left Ventricle; Apoplexy from Congestion.

Madelline Piquet, sixty-five years of age, of a robust constitution, but weakened by distress, entered

the hospital Cochin on the 11th of March, 1811. She only complained, at that time, of diarrhœa accompanied with colic. This woman had a large head, rather short neck, a strong voice and considerable *embonpoint*. She was subject to frequent headaches, vertigo, and stupor. The pulse was remarkably strong and vibrating; the pulsations of the heart were very strong, abrupt, and, as it were, detached, without being felt through a great extent. Nevertheless, the patient did not complain of having suffered palpitations before she entered the hospital. We prescribed both general and local bleeding.

After ten days' treatment, this patient began to recover, when, while walking in the garden, she was suddenly seized with vertigo, violent headach, desire to vomit and great difficulty of respiration.

Having been carried immediately to bed, she soon lost the use of speech, sensation, and voluntary motion, the face became redder and more injected; the lids were depressed as if paralyzed, the mouth was drawn on one side; the pulse, always strong and vibrating, became more frequent. In vain was full bleeding practised; in vain did we resort to an emetic draught, and sinapisms; the patient died in twelve hours after the attack of this frightful apoplexy.

Inspection of the Body.—The lungs were healthy, the heart appeared sufficiently large, the parietes of the left ventricle were thickened, a full inch, in the whole of their extent, except towards the apex of the heart; its cavity was in the natural state, the columnæ carneæ were very large.—The right side of the heart offered nothing peculiar. It was the same with the left auricle, the valves, and the large vessels.

All the cerebral vessels were distended with blood. We observed coagula of this fluid in the groove which separates the tuberculum annulare from the medulla spinalis: these coagula were prolonged from one side to the other, within the ventricle of the cerebellum, which they filled, even extending into its substance, where they had formed a nidus.—The other ventricles were full of bloody serum.

The abdominal viscera offered nothing extraordinary.

II.—ECCENTRIC HYPERTROPHY WITH DILATATION.

Case LXXVII.

Hypertrophy of the Left Ventricle with Enlargement of its Cavity.

Denis Angelot, tailor, twenty-two years of age, of a sanguine temperament, was admitted into the hospital Cochin the 12th of January, 1813, presenting the symptoms of acute rheumatism. He complained, at the same time, of pain in the left side, towards the base of the chest, which bulged out, and was sonorous in its whole extent. The pulse was strong, full and vibrating, the pulsations of the heart were also very distinct; the face was a little pale; the skin covered with copious sweat; the tongue moist and white; the abdomen tense, and sensible on pressure.

The second day of entrance, the pains of the joints were more acute, the least motion rendering them insupportable, respiration painful, tongue red at the

edges, thirst very urgent; chill, which lasted from two to three o'clock, was followed by violent heat and copious sweat; the pulsations of the heart were stronger, and vibrations of the pulse more distinct.

Same state, on the third and fourth day. On the fifth, the symptoms were a little diminished; but on the following days the rheumatic pains attained to the highest degree of intensity. They subsided on the eighth, and the swelling of the joints diminished; nevertheless, the pulsations of the heart increased in force.—Ninth day, pungent pain towards the twelfth left rib, removed by bleeding to the extent of twelve ounces. The pulsations of the heart, at the same time, lost their intensity, the pulse became softer, but the pain in the side was renewed, the next day, with palpitation and vibration of the pulse. Twelfth day, the symptoms of rheumatism had disappeared; but the heart continued to beat with the same violence, and the pulse vibrated as usual. Constipation was removed by laxatives.

Fifteenth and sixteenth days, pulsations of the heart and vibration of the pulse less marked.

For some days following, the patient thought his health entirely re-established, and was disposed to go out.

1st February, experienced anew a somewhat acute pain in the same side of the chest; this ceased in the evening; was renewed, with more violence, next day; again disappeared; returned the following day, and continued.

5th February, towards evening, the patient having walked a good while in the garden, suffered a violent chill, followed by nausea and vomiting; cough; very

acute pain in the side; painful respiration, and even stertorous tumultuous palpitations. He was bled in the arm, about midnight, with so much relief, that, the next day, he could get up and walk; but the same symptoms were renewed in the evening.

8th February, expectoration of blood has supervened; the limbs have begun to infiltrate; the extremities are cold; the pulse is small and irregular; the patient speaks only with the greatest difficulty; his words are interrupted by sighs and sobs. Ninth of February, he is getting into a comatose state; his respiration is noisy and loud, and the face, which has been constantly pale, now presents a cadaverous hue. Death occurred, the day following, at eight o'clock in the evening.

Inspection of the Body.—The lungs were much engorged with blood: the left lung was a little reflected towards the superior part of the chest, where it was united by several adhesions to the costal pleura. The pericardium contained a yellow serum. The heart was very large.—The parietes of the left ventricle were more than an inch thick, towards the base; the hypertrophy diminished, gradually, towards the apex, where it was also very distinct. The columnæ carneæ were more developed than in the natural state; the cavity of the ventricle was more than double the usual size.

The left auricle, and the valves, presented nothing extraordinary.—The walls of the right ventricle were thin, but its cavity was in the usual state, as well as the auricle of that side.—The caliber of the aorta was remarkably small, not only compared with the capacity of the left ventricle, but in reality.

We know that M. Portal, from an opinion which he had formed on the nature of thickening of the parietes of the heart, has been led to regard all *aneurisms* of the heart as passive. Here we shall present some researches, which prove how far M. Portal's mode of observation is conformable with truth. After having examined the heart of a patient, previously to this celebrated physician, we sent it to M. Chevalier, student of M. Vauquelin, requesting that he would make some chemical experiments on the left ventricle, compared with another which was, in every respect, healthy. Both these ventricles, examined with a lens and miscroscope, presented no other difference, excepting that the muscular fibres of the hypertrophied left ventricle, were more of a vermilion colour than those of the other. Two portions of the same weight having been put into distilled water, the portion which appertained to the thickened ventricle, coloured the water very distinctly, and, when taken out, was considerably redder than the other. The two ventricles were, afterwards, submitted to the action of boiling alcohol, to ascertain which of the two contained the greatest quantity of fatty substance.

Now, the result of this experiment was, that the hypertrophied ventricle contained a less quantity of this matter than what was found in the healthy ventricle.*

* This result is in direct opposition with the opinion of Lancisi and of M. Portal.

Case LXXVIII.

Pulsations of the Heart, very similar to the Blows of a Hammer; Paralysis of the Left Side, with Stiffness of the Right Arm; Crying and Agitation.—Hypertrophy, with Slight Dilatation of the Left Ventricle; Arachnitis; Softening of the Right Hemisphere of the Brain.

Jeanne Bossuet, 79 years of age, domestic, tall, thin, pale and nervous, was brought to the hospital Cochin the 12th of June, 1822. The persons who conveyed her could give us no other information, excepting that she had suddenly lost her senses, fifteen days before; that the intellectual faculties partially returned, for a few minutes; but that, afterwards, the left side had remained paralyzed. The symptoms presented by the patient, on arrival, were the following: Head inclined to the right, mouth turned the same way, tongue drawn a little to the left, when protruded, which is very difficult; pupils equal; mobile; face expressing a kind of stupid astonishment; paralysis of the left limbs, weeping, agitation, loquacity, subdelirium. All the arteries, but especially the carotids, beat with force, and the pulse is somewhat frequent. The clothes of the patient are raised up by the forcible pulsations of the heart, which are strong, remarkably distinct, and repel the hand vigorously, when applied over the precordial region. Explored, with the cylinder, they resemble, very much, the blows of a hammer, and produce a distinct and quite clear sound.

Diagnosis.—Hypertrophy of the heart, and inflammation of the brain. Such severe diseases, in connexion with the advanced age of the subject, did

not permit us to hope for a cure, and we were content with prescribing an infusion of arnica.

At the time when the face lost its expression, the superior right extremity became stiff, and resisted extension; the patient completely sunk in the comatose state, uttered groans and cries, and died in the course of the fifth day after entrance.

Inspection of the Body thirty hours after Death.

The two lungs are perfectly crepitant; the right is adherent. The pericardium is injected; the heart is much larger than the fist of the subject. The right ventricle, enveloped in a larger quantity of fat, is, in other respects, healthy. It does not contain blood, nor does the corresponding auricle, the fleshy columns of which are very strong. The left ventricle is hypertrophied. Its walls, at the base, are about eleven lines in thickness, the ventricular septum is about seven lines thick. The columnæ of the left ventricle are very numerous; its capacity is somewhat greater than that of the right. The walls of the left auricle are thickened. The texture of the ventricles is red and dense. The coronaries are formed, in bold relief, upon the surface of the heart; their parietes are hard and ossified throughout their whole course. Yellow points are observed in all the valves of the heart; the aortic valves are even strewed with several osseous calcarious plates. The origin of the aorta is dilated: in the whole length of this artery, the internal surface is unequal, covered with yellow earthy laminæ, and calcarious scales, analogous to egg-shells, but thicker; several of which have the internal membrane raised. The arteries which

arise immediately from the aorta, those of the extremities, and especially the pelvic; the arteries of the base of the cranium, and the ophthalmic, partake of the degeneration of the aorta; their cellular membrane is much injected:* The trunk of the superior mesenteric artery is entirely ossified, and forms a hard inflexible tube; but the greater as well as lesser branches, distributed to the digestive organs, are exempt from this change. The arterial system, throughout, is distended with liquid blood, whilst the venous system, in a state of collapse, contains hardly any. The circumvolutions of the small intestine, are small and contracted. The rectum is distended by indurated feces. The mucous membrane of the stomach, is of a deep red in the region of the spleen. There is a great quantity of serum in the base of the cranium, and in the ventricles. The arachnoid, which covers the superior circumvolutions of the brain, is opaque and of a milky colour. The posterior lobe of the right hemisphere, offers a deep yellow tint: it is softened and *somewhat deliquescent*. In its centre there is a whitish, creamy matter, much resembling pus; its substance offers, in other respects, considerable redness and injection, and is disseminated with minute clots of blood, as well as yellow masses, of a larger size, easily broken down, which are internally filled with blood. The nidus is covered with very fine membrane, overrun with red vessels, and can be very distinctly observed. The arachnoid, which envelops the softened circumvolutions, adheres so closely to them that they appear to be confounded together.

* It is rather remarkable that the primitive carotids had, in some way, escaped alteration.

The remaining portion of the brain is without any remarkable alteration. The plexus, and choroid membrane contain hydatidiform globules.

Case LXXIX.

Aneurismal Hypertrophy of the Left Ventricle, Hydrothorax; Tapeworm in the Ilium, &c.

Peter Brisson, mason, of rather diminutive stature, but strong constitution, remarked that he had been sick only fifteen days when he entered the hospital Cochin, the 13th of June, 1822. The alarming state in which we found him led us, however, to suppose that his disease began at a more remote period. He was in the following condition: pain in the middle of the thorax and precordial region, where the patient experienced an insupportable sensation of oppression. Cough, orthopnœa, strong, vibrating and regular pulse; pulsations of the heart scarcely sensible to the hand: (the extreme pain and agitation did not permit us to practise auscultation:) headach, vertigo, frequent loss of sight; distressing insomnia; face pale and swollen; lips large, and somewhat livid.

Diagnosis.—Aneurism of the heart.

Prescription.—(Ptisan aperit. jul. digital.)

16th of June, four days after entrance, patient incessantly threatened with suspension of respiration; could no longer lie in the horizontal posture; fright and anxiety depicted in the countenance. 17th, the patient remains sitting, supported on the edge of the bed; the head depressed, and the body inclining forward: he groans, and is panting: implores our assistance, and begs that we would not let him die. We

opened a vein in the arm, but the blood would only flow by drops; which obliged us to substitute for venesection the application of thirty leeches to the region of the heart. 18th, skin cold, œdema of the right foot. (Blister to the right foot.) About two hours' sleep the following night. 19th, stormy and rainy day; rapid increase of all the symptoms, suffocation, frightful distress; the patient, naked, sitting on his chair; the body strongly bent forward; the head, supported on the edge of the bed, can no longer maintain any other position, and sudden death is expected. 20th, situation more and more deplorable; convulsive contraction of the diaphragm; imminent suffocation; face more swollen; eyes distorted; skin cold, desire of death; which, finally, occurred at ten o'clock in the morning.

Inspection of the Body, twenty-one Hours after Death.

1*st. External Appearance.*—Body well formed: the limbs are infiltrated, and their veins distended with blood.

2*d. Respiratory and Circulatory Organs.*—Flat sound of both sides of the chest; effusion of a large quantity of slightly red coloured serum in the two cavities of the pleura. The two lungs, of rather small size, pressed by this liquid and the enormous mass of the heart, yet retained a crepitating texture, although condensed by compression. The pericardium contained a small quantity of reddish serum. The heart, swelled with blood, and of enormous size, (four times as large as the fist of the subject,) occupies as much space as both lungs together. It is situated transversely, in such a manner that its base

slightly compresses the right lung, while the two ventricles press with their whole weight on the left lung. The heart, disembarrassed of the fibrinous black clots which distend it, still retains its extraordinary size.

The left ventricle is about three times the natural size, and its parietes about six lines thick. Its texture is red, and tolerably firm. The left auricle is excessively small, compared with the ventricle, and is capable of containing a hen's egg. The right ventricle is much larger than the left, and, although a little dilated, retains its usual thickness. The thickness of this ventricle is pretty uniform throughout its whole extent, as is also the case with the left, but diminishes a little towards the apex. The right auricle is thick and fleshy, and is about one-third larger than the left. The orifices of the heart are healthy. The aorta and pulmonary artery are distended with clots of blood: the curvature of the former is apparently dilated, whilst its orifice is, perhaps, a little contracted.

3*d*. *Abdominal Organs*.—The mucous membrane of the stomach, the small and large intestine, present a deep red colour, analogous to that of the kermes mineral, produced by the mechanical distention of the red vessels. A living tænia lay along the whole length of the intestinum ileum. The liver and spleen are distended with blood. The bladder is contracted, and is, internally, of a rose-colour.

4*th*. *Encephalic Organs*.—The scalp is also swollen with blood; there is a very considerable quantity of serum in the arachnoid. That portion of the membrane which covers the convexity of the brain ad-

heres to the parietal portion, and presents, here and there, various granulations; on the sides of the hemispheres, the arachnoid is opaque, milky, and injected; the cerebral substance is very soft.

In the case we have just related, the hypertrophia, instead of being found in the *substance* of the parietes, was at the *surface*. Although the substance of the parietes was evidently in a healthy state, the hypertrophy was, notwithstanding, unusually large, the left ventricle being three times as large as in the natural state.*

We might mention a great number of cases of hypertrophy with dilatation of the left ventricle. This form is the most common; it is, also, that which authors have exclusively studied under the name of active aneurism. But we shall confine our attention, here, to the cases we are about to read. We would refer those who wish for other facts of the same kind, to the following cases; namely, the twenty-seventh, thirty-third, thirty-fifth, thirty-seventh, thirty-eighth, forty-second, forty-ninth, fifty-third, fifty-ninth, sixty-second, sixty-third, and sixty-ninth; all of which contain remarks respecting hypertrophia, with dilatation of the left ventricle.

Let us pass to a form of hypertrophia, less known, that with contraction of the cavity.

The illustrious Senac has devoted one of the articles of his work to the diminished volume, contraction of the cavities, smallness and desiccation of that organ. The cases which we shall present have no

* This hypertrophy proceeded in a very rapid and acute manner, since the patient observed to us, that he was affected with the symptoms which announce it only fifteen days before he entered.

analogy with the facts cited by Senac; all of which he has borrowed, as usual, from other writers. In the cases recorded by Malpighi, Littre, Fabricius, and Hildanus, the heart was very small, wrinkled, and shrunken. In those we have collected, the volume of the heart is not diminished: the walls, indeed, are thicker and more fleshy, but the thickening is formed at the expense of the cavity, the capacity of which has proportionably diminished. We have sought in vain among authors for cases which resemble our own. Here, however, is what the author of an extract from the work of Corvisart has inserted in the *Dictionnaire des Sciences Medicales:*—"In opposition to the aneurisms of the heart, we ought to mention the state of that viscus in which its cavities are found remarkably contracted. These cases are most commonly overlooked, and have never been sufficiently investigated to enable us to speak of them so fully as they deserve. Perhaps a more extended inquiry than has yet been made may reveal more interesting views. I shall be satisfied by observing that I have frequently seen the ventricles, especially the left, much less *capacious* than the strength and stature of the subject required. There was, most frequently, a rigidity of the fibres, which led me to perceive that that state was *constant* and morbid. In the same way that we perceive a heart to be aneurismal by comparison with the body of the individual in whom it exists, in like manner do we discover its diminished volume; because the whole of the heart may be in this condition, as well as either of its cavities. It is true that the aneurism attracts more attention than the diminished volume; a fact which

proves that it has been more noticed, and that the phenomena connected with it are better known. Farthermore, there must be peculiar symptoms corresponding with the latter affection. They have not, as yet, been pointed out; and I must acknowledge, that having but very few facts on this point of science, I cannot establish any which are satisfactory."

The author of this article does not mention the hypertrophy of the parietes, and the cases of which he speaks have nothing in common with ours, excepting the diminished capacity of one or more of the cavities of the heart. We have, also, frequently observed a great diminution of the cavity of the ventricles, from causes unconnected with hypertrophy. But this is an entirely different disease; not a form of atrophy, but, in fact, a true atrophy of the heart. At the time we communicated to Corvisart two remarkable examples of this concentric hypertrophy, we desired our students to make new researches on the subject in the other hospitals of Paris, and to fix the attention of our brethren on this important point of medical science. We have had the satisfaction to learn, that our observations have been confirmed by other similar facts collected in the different establishments devoted to clinical observation. It is of little consequence that they have been presented as entirely new, as discoveries, provided they be useful for the advancement of science. But let us return to our cases.

III.—CONCENTRIC HYPERTROPHY, WITH CONTRACTION OF THE CAVITY.

Case LXXX.

Violent, dull, and circumscribed Pulsations of the Left Ventricle; Palpitations; Paralysis of the Right Arm, succeeded by Erysipelas of the Face; Death; Hypertrophia of the Left Ventricle, with Contraction of its Cavity; Softening of the Brain, Cerebellum, &c.

Prudence Sally, forty years of age, domestic, of a dry and nervous temperament, born at St. Domingo, had suffered palpitations at intervals for eight years, when she entered the hospital Cochin the eighth of April, 1822. Her menstruation, which had been habitually defective, but regular, had ceased only within a month. During the three preceding years, she had been frequently bled with advantage. In January last, (1822,) the right arm had been completely paralyzed. At the time of entrance, the paralysis was not entirely removed. She could move the limb, although very feebly. The patient complained of rather violent continued headach, occupying particularly the *sides and back part of the head.* When questioned, she replied with extreme slowness: her features disclosed a kind of idiotic stupor; she occasionally suffered from palpitation and suffocation; the pulse was regular, but *little developed,* yet *hard* and *strong;* the pulsations of the left ventricle, explored with the cylinder, were strong, concentrated, dull, and profound.

Diagnosis.—Hypertrophy of the left ventricle; cerebral affection.

We prescribed fifteen leeches to the anus, and an infusion of tilia and orange flowers. Nothing remarkable in the state of the patient occurred, until the 1st of May. At this period, the conjunctiva of the right eye was much inflamed; the headach was intolerable, and there was constipation. (Emplast. lyttæ ad nucham, hydromel. sodæ sulphas., pedil. sinap.)

In the mean time, the blister determined a very painful swelling of the lymphatic ganglions of the right side of the neck, in which were formed several deposites of suppuration. We made a small incision, which was followed by relief.

On the 15th of May, after having been out to walk the whole day, the patient had a *nervous* attack, respecting the symptoms of which we could learn nothing satisfactorily. She stated that she had had a great many similar ones. The night following she was restless. (Pot. sedativ.; pediluv.)

16th. Nervous accession has entirely disappeared, but the right side of the face is the seat of an œdematous erysipelas and fever: some symptoms of delirium in the day.

17th. The erysipelas extends to the whole face. (Thirty leeches to the neck and face; emetic, whey, lemonade, diet.)

18th. Very high fever, constant tendency to fall out of bed; no reply to questions. Called to the patient at two o'clock in the afternoon; found her insensible; lips discoloured, inflammatory swelling of the face almost entirely subsided; face pale, lids closed, sensation extinct; pulse frequent, and small; respiration unfrequent, slow, and accompanied with rattle. Meanwhile, the movements of respiration

grow weaker and weaker, the pulse loses its frequency, becomes slow, and disappears: the pulsations of the heart continue; several half convulsive inspirations still occur: in a long interval between them we thought the patient dead. The hand, applied over the region of the heart, feels it still pulsating. Two other deep inspirations are observed; the mouth is covered with a frothy substance; a kind of tremor is observed in the muscles of the fore arm; their tendons start—respiration ceases—the patient is dead.

Inspection of the Body forty-eight Hours after Death.

No rigidity; body without infiltration, well formed.

1*st. Respiratory and Circulatory Organs.*—The two lungs are healthy. The heart, swollen with blood, and twice as large as the fist of the subject, fills the whole anterior left side of the chest, as high as the clavicle. The orifices present nothing worthy of observation, excepting the valves. *The left ventricle is very large, and its parietes are more than an inch thick at their middle part: the thickness diminishes towards the base and the apex. Some of the fleshy columns are also hypertrophied. The cavity of the ventricle is very perceptibly contracted.* The two auricles and the right ventricle, the apex of which does not descend so far downward as that of the left, are nearly in a healthy state: the interventricular septum is about six lines thick: the muscular texture of the heart is red, firm and ruddy. The aorta, the caliber of which is rather small, contains long fibrinous strings: its internal surface is strewn with yellow, earthy, calcarious, or fibro-cartilaginous

scales. The same change is observed in the arteries of the pelvis and lower extremities, and especially those of the brain. The coronary arteries, the carotids, and the arteries of the upper extremities, are healthy; excepting that the former are larger than in the natural state.

2*d*. *The Abdominal Organs*—present various changes which it would be unnecessary to relate in this place.

3. *Encephalic Organs*.—Inflammatory softening of the right corpus striatum, and of the middle inferior portion of the left hemisphere. Softening of the central part of the right hemisphere of the cerebellum. (I have merely alluded to these changes, as it would take up too much time, and be superfluous to describe them here.)

Case LXXXI.

Hypertrophy of the Left Ventricle, with Contraction of its Cavity.

Felicite Lange, fifty-eight years of age, washerwoman, of a strong constitution, had not been regular for thirteen years, when she was received into the hospital Cochin, the 2d of December, 1812. She complained, for two years, of frequent palpitations; her respiration was painful, interrupted, and panting: symptoms which had been most decidedly developed within eight days; so that the patient was obliged to be at perfect rest. The complexion was of a livid red, the face swollen, the lips black; inability of lying on the left side: percussion gave a flat sound in almost every part of the chest; a circum-

stance which might, in part, depend upon the thickened state of the infiltrated integuments. The infiltration was almost general, although most marked in the inferior extremities: the sleep was frequently disturbed by sudden starting. The symptoms continued nearly the same until death, which took place on the 14th of December, twelve days after entrance.

Inspection of the Body.—The two lungs were in a healthy state, excepting that they were united by some slight adhesions to the costal pleuræ; the cavities of the chest and pericardium contained only a very small quantity of serum.

The heart was large, and very much distended with blood; its valves were not in the least diseased. Considerable hypertrophy was observed in the left ventricle, the walls of which, towards the base, were nearly an inch and a half thick, and its capacity diminished more than one-half: the left auricle was in the natural state.

The ventricle and auricle of the right side were dilated, and their walls appeared somewhat diminished in thickness.

The arch of the aorta was not dilated; but its internal membrane was ossified in nearly the whole of its extent. This disease has presented us the signs of obstruction to the circulation, and nevertheless the orifices and valves were not the seat of any lesion; but remark, that the contraction of the cavity of the left ventricle ought to produce the same phenomena that the contraction of the orifices do; and we should, therefore, not be astonished that the lips of this woman were swollen and black, and the limbs infiltrated, &c.

Case LXXXII.

Hypertrophy of the Left Ventricle, with Contraction of its Cavity.

Jean Courtin, parchment maker, sixty-seven years of age, of a sanguine temperament, for three years subject to *fits*, probably *epileptic*, had enjoyed until thirty years of age, tolerably good health. His mother died at the age of sixty-nine, and was affected from the age of forty years, with almost continual cough, accompanied with dyspnœa, or to speak in the language of the patient, with short breath. His father died of a catarrhal affection at the age of forty-five.

In the course of the month of September, 1814, Courtin began to suffer considerable oppression about the region of the heart: he continued, notwithstanding, to pursue his usual avocations until the end of November following; but the dyspnœa continually increasing, the patient was obliged to suspend work, and was admitted to the hospital Cochin on the 1st of December. He left it on the 20th, relieved by the local bleeding, and anodynes were administered: he again resumed his work, but the symptoms already mentioned were, in a short time, removed. The 9th of January, 1815, he was taken with trembling, followed by fever and cough, and was obliged to keep his bed. The 17th of the same month, he entered the hospital; his respiration was short, with constant oppression in the region of the heart and sense of impending suffocation; the percussion of the chest was sonorous, but painful toward the left and poste-

rior part; the pulse was regular, small and weak. The patient could no longer support the horizontal position, and the least motion in bed excited a dry cough. Nevertheless he slept quite well, and without any starting. There was no œdema; the face pale and meagre, like the rest of the body, did not announce any disease of the heart. The patient remained nearly in the same state until the 20th of February. Febrile symptoms at that time appeared: the habitual cough augmented in violence, and the fever having assumed an adynamic form, the patient died on the 29th of the same month.

Inspection of the Body.—Close adhesion between the contiguous surfaces of the pleura. Texture of the lungs crepitant, very permeable, except at the top of the right, where we observed several points of induration, in the centre of which there were very small tubercular grains.

The heart was of nearly the natural size, only it appeared a little larger than comported with the general structure of the body; the pericardium contained from three to four ounces of serum; the left ventricle was more than double the natural thickness, and of a round form; the hypertrophy was nearly equal throughout the whole extent of the organ: the texture of the parietes was rather firm, but of a pale yellow colour: the ventricular cavity was so contracted, that we could with difficulty introduce a common-sized filbert. The valves and the other parts of the heart exhibited nothing peculiar.

SECTION II.

CASES OF HYPERTROPHY OF THE RIGHT VENTRICLE.

I. SIMPLE HYPERTROPHY.

Case LXXXIII.

Simple Hypertrophy of the Right Ventricle; Simple Dilatation of the Left Auricle.

Marie Therese Hubert, sixty-four years of age, subject to catarrhal affections, had suffered from the age of forty-five years, the period of the cessation of her menses, the most depressing sensations, and began to suffer from palpitations, paroxysms of suffocation, and anxious distress about the precordial region. This woman was relieved by the application of leeches to the anus. She suffered, for a long time afterwards, a variety of troublesome disorders only, and the primitive disease, having remained stationary, and as it were stifled, was not renewed, and did not exhibit any alarming severity until she was sixty years of age. At that time she slept little or none; and, when she did, it was interrupted by starting: respiration became more and more difficult, and as it were suspicious, and a sense of suffocation occurred upon the least exercise. On entering the hospital Cochin, on the 14th of October, 1815, the patient was very weak; the pulse could hardly be felt, while the pulsations of the heart were very strong, precipitous, and could be felt and even seen in a great extent of the chest: the

skin was pale and livid, the face depressed, and the patient complained of being universally cold. The hands, feet, legs and thighs were infiltrated, and *as cold as marble*. The horizontal position was impossible: percussion of the chest gave a flat sound. The patient, overwhelmed with anxiety, expired four days after her entrance, without having suffered any new symptom which would lead us to suppose she was so near her end.

Inspection of the Body.—The respiratory organs were in the natural state.

The pericardium was very large, and distended by a pint of limpid serous fluid.

The heart, of good size, offered nothing remarkable excepting a dilatation of the left auricle, without any change of the thickness of its walls; and a thickening of the parietes of the right ventricle, so considerable as to render them equal to those of the left, and without its cavity being either augmented or diminished in extent. The hypertrophy was nearly equal and uniform in the whole extent of the parietes of the ventricle. The left ventricle was thinner and softer than in the natural state. *The valves of the heart and large vessels were healthy.*

We once gave Corvisart a case analogous to the preceding, but have not kept a copy of it. We recollect, however, that the hypertrophy of the right ventricle terminated by a congestion of blood in the lungs, resembling pulmonary apoplexy: the right ventricle was in a state of hypertrophy, and had produced on the pulmonary artery and the lung a similar effect to that which hypertrophy of the left ventricle produces on the brain, during the formation of certain hemorrhages of that organ.

It is sufficiently worthy of remark, that, in most cases of hypertrophy, whether simple or otherwise, the left ventricle is soft and flabby, as if there had been a transposition of the ventricles, and one of them had usurped the place of the other.

After having searched Morgagni for a considerable time, for examples similar to those which I had observed, I found one which I wish to relate.*

A country woman, about fifty years of age, was affected at intervals with dyspnœa, accompanied with constriction of the chest. The pulse was hard, and all the arteries were in such a state of agitation, that we could easily perceive their alternate motion, in the hands, in the temples and in the neck. When this woman was much affected with difficulty of respiration, she came to the hospital, where she was relieved by full bleeding. She had passed four years in this state, when she was suddenly attacked with pain in the stomach, and died in twenty-four hours.

Examination of the Body.—The parietes of the left side of the heart were much thicker than in the natural state; while, in the right side, they were somewhat thinner. In the mean time, the aorta, the ventricles and pulmonary artery, *were not in the least dilated.* The valves of the aorta were somewhat indurated, and yellow plicæ were observed in different portions of the aorta, which announced the commencement of ossification; the carotids, and subclavians at the division of their branches were also more dilated than natural.

The stomach presented several points of ulceration, which, although of recent appearance, present-

* See Epist. 29, Art. 20.

ed already a gangrenous black colour: numerous erosions were also observed on the œsophagus.

This case, coming from a physician of such great authority, confirms, in the most happy manner, the numerous cases we have collected of simple hypertrophy, or with a natural state of the cavity of the left ventricle.*

Case LXXXIV.

Simple Hypertrophy of the right Ventricle; Hypertrophy, with Dilatation of the Corresponding Auricle; Contraction of the left Auriculo-ventricular Orifice.

Elizabeth Lassolle, thirty years of age, of a sanguine temperament, and very corpulent, had suffered from impaired health for three years, when she entered the Cochin hospital, on the 12th of December, 1818.

From the beginning, she had complained of slight dyspnœa, and, occasionally, transient palpitations; repeated catarrhal affections increased the difficulty of respiration, and produced a sense of suffocation very distinctly marked.

This patient complained of violent headach, and, frequently, of a sense of hot vapour, which seemed to rise from the chest towards the head: the palpitations were renewed more frequently, and assumed somewhat of a periodical character.

We regarded this affection as nervous, and confined the treatment to a mild regimen, and a few antispasmodics. The symptoms ceased from time to time;

* This case should be classed among those which relate to simple hypertrophy of the left ventricle.

and the longer intermissions gave some hopes of a partial cure.

The symptoms we are about to mention occurred about a month before she entered the hospital.

She was rather corpulent, and had a bluish complexion; the eyes were slightly injected; the pulsations of the carotids were considerably developed; the chest was quite loaded with fat, and did not allow us to make any satisfactory diagnosis by percussion; the superior and inferior extremities were œdematous, and depressions with the finger were made with considerable difficulty: the vertical position had become indispensable.

Respiration was painful, short and precipitious; the palpitations were frequent; the pulsations of the heart were felt as far as the right side of the chest: these pulsations were soft; they were neither dry nor detached. The least compression of the chest produced greater dyspnœa; the cough was infrequent, and accompanied by mucous expectoration; the pulse was low; the dilatation of the parietes seemed to be made with difficulty: the pulsations had neither the force nor the vibration so common in hypertrophy.

The abdomen was pliable, and not in the least painful to the touch.

The patient reclined her head almost constantly upon the chest; sometimes it was thrown backwards, with force, accompanied with groans and sighs; the arms were crossed over the chest, and this condition was continued night and day.

The symptoms continued the following days with the same intensity. Several bloody striæ coloured the matter expectorated; the palpitations and pulsa-

tions of the heart diminished, now and then, without any considerable relief to the patient.

Finally, the symptoms augmented more and more; the sputa were more frequent and bloody, and the patient died on the 20th of December, at half past eleven o'clock, nine days after entrance.

Inspection of the Body.—The chest contains a small quantity of serum; the lungs have formed adhesions, and these adhesions are old and well organized. The texture of the lungs will scarcely allow of any blood to escape: they are soft and crepitant: we observe only on the inferior lobe of each, two or three portions which are hard and swollen. The pleura, near the adhesions, is healthy. The pericardium is healthy and transparent and contains only a small portion of serum. The *heart* is somewhat larger than natural, and loaded with a considerable quantity of fat: the capacity of the right auricle is much increased, and its fleshy fasciculi more distinct than in the natural state; the parietes of the right ventricle, which is nearly of the natural size, are much thicker, and its columnæ more developed than in the natural state.

The right auriculo-ventricular orifice is free; the tricuspid valve presents several spots of induration: it is thickened, and of a yellow colour: the tendinous fillets attached to it are shorter than in the natural state. The orifice of the pulmonary artery offers nothing peculiar; the same may be said of the left ventricle, but the left auriculo-ventricular orifice is much altered. The opening which intercepts the two free edges of the mitral valve is very small: it is more than four lines and a half in its greatest diame-

ter, and in the smallest a line and a half: the two extremities of its free edges are united, and *blended* with each other: the cords attached to it are matted together, and very short. The valve is thickened, fibro-cartilaginous, strewed with numerous minute grains, forming small layers of variable density, and several small insulated nipples: it is of a pale yellow colour. The abdomen contains some serum. The mucous membrane of the stomach is very red, and its follicles are developed: that of the duodenum is of a rose red; that of the small intestine is red and thickened; lastly, that of the large intestines is redder and more *inflamed.*

In this case, the phenomena of the contraction of the orifices of the heart predominate. We have occupied ourselves with these too much in detail elsewhere, to return to them here.

II.—ECCENTRIC HYPERTROPHY, WITH DILATATION.

Case LXXXV.

Hypertrophy of the Right Ventricle, with Dilatation of its Cavity.

James Lauriot, sixty-four years of age, rope-maker, was carried to the hospital Cochin the 29th of November, 1813, in a state which did not permit him to give an account of his disease. Those who accompanied him could give us no other information, excepting that he had been indisposed for two

years, and that he had continued to work till within three weeks. This man had expressed himself with difficulty, spoke in a low voice, had some difculty in arranging his ideas, and he at times fell into a species of delirium. His face, his ears, and his neck were of a very deep violet blue; respiration was laborious; the pulse weak, and rather frequent: we could with great difficulty perceive the pulsations of the heart; the lower extremities were infiltrated. This patient died the third day after he entered the hospital.

Inspection of the Body.—The heart was much larger than in the natural state: the right auricle had rather greater capacity than natural; its parietes were a little thickened; the cavity of the ventricle of the same side was considerably enlarged: its walls were very firm, of a vermilion red colour, and at least double the natural size. The left ventricle offered nothing peculiar, only its walls were flabby; the left auricle and all the valves were healthy. The valve of the foramen ovale was much relaxed, and very thin.

The lungs were healthy.

The abdomen contained about a pint of serum.

Case LXXXVI.

Aneurismal Hypertrophy of the Right Ventricle.

A thrasher, seventy years of age, of a robust and sanguine temperament, was frequently troubled with hemorrhage from the nose, until he was twenty-five years of age: from this period, until forty, he was bled once or twice every year. At sixty years of

age, he began to suffer from the pulsations of the heart, which gradually increased, as well as the catarrh with which they were accompanied. In the mean time, the dyspnœa became considerable, and the inferior extremities were infiltrated; the patient left the department of the Seine-et-Oise, where he was born, to go to Paris. After having travelled three leagues on foot, he was taken with faintness, which continued nearly an hour; he again travelled on foot, the next day, about two leagues. Having arrived at Saint-Denys, he was obliged to take a carriage, and spit blood the whole day. The next day, the 9th of April, 1810, he was received at the Cochin hospital. His face was livid, and slightly yellow; the lips were entirely violet; the lower limbs were infiltrated; the pulsations of the heart were strongly developed, although the weakness was extreme, and the pulse frequent, without either vibration or irregularity: the dyspnœa, cough, and expectoration of blood continued. On the 12th of April the pulse was insensible. On the 14th, œdema had invaded the right arm: the patient died the same day.

Inspection of the Body.—About a pound of serum in the right pleura; lungs healthy. Heart filled with clotted blood, and at least double the natural size. The two auricles were distended, but offered nothing peculiar in other respects; the cavity of the right ventricle was nearly three times as large as in the natural state: its walls were dense, compact, and firm, and as thick as those of the left ventricle in the ordinary state. The latter was only of the natural size; its walls were somewhat thin, and contrasted with those of the right ventricle by their softness and flac-

cidity. The orifices were free. The mucous membrane of the stomach was of a deep red colour, almost brown; the liver was of a yellow colour, striped with small black spots.

III.—CONCENTRIC HYPERTROPHY, WITH CONTRACTION OF THE CAVITY.

Case LXXXVII.

Hypertrophy of the Right Ventricle, with a considerably diminished Cavity; Membranous Septum at the Orifice of the Pulmonary Artery; Persistence of the Foramen Ovale; Abscess and Softening of the Brain, &c.

Marie Gabrielle Vilain had exhibited, from her earliest infancy, something unusual in her physiognomy. Whenever she took more than common exercise, her face became discoloured of a violet hue: her respiration, which was habitually embarrassed, became so in a very high degree upon going up stairs. At forty-seven years of age, she ceased to menstruate, and began to complain of palpitations accompanied with acute pain in the precordial region: she often stopped to feel her heart beat, and at those times would say that she would soon die. Finally, her lips and face became so blue, even when she walked slowly, that she was fearful of being seen in the streets. She was subject to copious nasal hemorrhages, one of which was frightful by its quantity and duration. She frequently experienced cramps in the limbs. Her constitution, farthermore, had always been somewhat feeble; her stature was but lit-

tle developed. She remained unmarried, and led a regular life. She had arrived at the age of fifty-seven, when, on the 1st of July, 1821, towards noon, she complained to her sister of something like cramp in the left hand and foot. Soon afterwards, she experienced great difficulty in moving the limbs; and, at length, entirely lost the power of motion and sensation of the whole of that side of the body; retaining, however, her rational faculties, and even the use of speech. The third day after these accidents, she entered the hospital Cochin, in the following state: expression animated, face of a violet red colour, lips blue, eyes projecting and brilliant; orthopnœa; pulse small, easily depressed in the left arm, hard and rather strong in the right; paralysis of the left side complete. (Arnica, haustus. æther.)

During the night the paralyzed limbs were affected with convulsions, like those produced by the nux vomica. At the same time, the respiration became more laborious, the face more animated, the eyes more brilliant; the lips presented a rose colour; the pulsations of the heart were tumultuous. On applying the hand to the precordial region, we perceived a species of vibratory tremor. (Fifteen leeches to the anus; digitalis.) All these symptoms were promptly relieved, and were not accompanied with any of importance. The fourth day, at the visit, M. Bertin bled her in the arm: the day was tolerably tranquil. From the fifth to the twelfth day, she had many accessions similar to the preceding, but not so long, nor so violent. Finally, the twelfth day, about noon, the patient suddenly lost her senses. Face animated; eyes extremely brilliant, and projecting; convulsive

agitation; dilatation of the pupil; respiration more and more impeded; universal paralysis; pulsations of the heart and the carotids stronger and more frequent.

At the moment of her admission, we bled in the arm; after which, the patient could move the right arm a little: she even seemed to know what was said to her. But this improvement was only momentary: the symptoms, on the contrary, were aggravated. The patient died the next day; being the thirteenth day since the development of the cerebral affection.

*Inspection of the Body.**—1*st.* The heart was extremely large; it weighed twelve ounces, while that of another woman, examined at the same time, weighed only four. The right auricle was much developed, and contained several ounces of blood. An opening resulting from a defective obliteration of the foramen ovale, about four lines in diameter, a communication between the two auricles: the right auriculo-ventricular orifice was narrow; the cavity of the corresponding ventricle was contracted, and might contain a pigeon's egg; its parietes varied in thickness from eleven to sixteen lines; the valves were small, but their cordæ tendineæ were strong, and appeared to be enveloped in a prolongation of the fleshy substance. The orifice of the pulmonary artery offered a horizontal septum, convex on the side of the lung, concave on the side of the ventricle; having an opening in its centre of two lines and a half in diameter, perfectly circular. This species of *hymen* had three small folds or wrinkles on its convex side; but we could not observe on either of its surfaces any

* See Plate III.

vestiges to indicate the division of its three valves. Beyond this septum the pulmonary artery presented nothing peculiar: the left auricle, nearly of the common size, presented the orifice of the foramen ovale, above described; the left ventricle was larger and its parietes thicker than natural; the aorta was strewed with osseous and cartilaginous plicæ; the passage of the artery was obliterated. 2. The anterior lobe of the right hemisphere of the brain contained an encysted abscess; around the soft and vascular membrane which contained the pus, the cerebral substance offered a deep red colour, which became fainter in proportion to the distance from the deposite, and afterwards assumed a yellow tint; the substance, in that situation, was evidently softened. Under the pia mater we found here and there a pellicular or albuminous matter, the consistence of which in some points was sufficiently great.

This case is very important in many respects, and presents us with an arrangement of the orifice of the pulmonary artery so peculiar, that the annals of science can hardly furnish a similar example: we can only find one case, from the seventeenth letter of Morgagni which bears any resemblance to it. However, between the case of Morgagni and the present, there are peculiarities, which every one may perceive without difficulty after having read the passage in which he describes the morbid structure of the ventriculo-pulmonary orifice. The description is as follows: "Sigmoides autem, quæ pulmonaris arteriæ ostio præficiuntur, ad basim quidem erant secundum naturam; sed parte superiore cartilagineæ videbantur, quin exiguum ossis pustulum jam habe-

bant: erautque ea parte sic inter se colligatæ, ut vix foramen relinquerent, lente non majus, per quod sanguis exiret; erant autem ad illud foramen quædam exiguae productiones carneo-membranosæ, ea ratione collocatæ, ut valvularum vices supplere possent, egredienti sanguini cedendo, regressino, autem obitando. (*De Sedibus. et Caus. Morb.*, tom. ii. page 525 and 526, nov. edit. curante F. Chaussier.)

This case presents us with a striking example of the complication so frequently met with in the various affections of the heart; in it we observe a phenomenon which at first sight appears very extraordinary, namely, the constriction of the right ventricle: it would appear, on the contrary, when we take into view the orifice of the pulmonary artery, that the ventricle ought to have been dilated.

In the mean time we can account, at least to a certain extent, for their anomaly, when we reflect, that, by means of the foramen ovale, the portion of the blood destined to the right ventricle, would pass directly into the left auricle: this ventricle, then, instead of dilating, would collapse so as to adapt itself to the small quantity of blood entering it. But how are we to explain the enormous thickening of this ventricle? We should say, undoubtedly, that the constant resistance which it is obliged to overcome to force the blood into the pulmonary artery, was sufficient to determine the hypertrophy, by forcing it to more powerful contraction. But this explanation supposes that the quantity of blood which the ventricle receives is not proportionate to the smallness of the passage through which it should pass into the lungs; and we shall presently see that this hypo-

thesis is hardly admissible, since the ventricle, instead of being dilated, was, on the contrary, contracted; which we have explained by supposing that a considerable portion of the column of blood, coming from the vena cava, flows into the left auricle, through the foramen ovale. As for ourselves, if we ventured to propose at this moment an explanation, we should say that the hypertrophy of the right ventricle might have had, for one of its causes, the introduction of a certain quantity of blood from the left auricle into the cavity of the ventricle. We may conceive that the presence of this red, arterial, oxygenated red blood in the interior of the right ventricle, and its contact with the walls of this organ to which it had not been accustomed, ought to excite a kind of nutrient irritation, which, acting from without inwards, should at length determine this form of hypertrophy, which is developed, as it were, at the expense of the cavity, and which we have, for that reason, called *concentric*.

Case LXXXVIII.

Hypertrophy of the Left Auricle; Interventricular Septum and Columnæ of the Right Ventricle, with Enlargement of the Left Cavities; Contraction, or rather Disappearance of the Cavity of the Right Ventricle, and Softening of the Parietes of the Left, a little thickened towards the Apex.

The patient, named Chenet, thirty-seven years of age, had begun to experience in the course of his thirty-second year, palpitations, somewhat violent, succeeding rheumatic pains: two bleedings in the arm removed this accident; nevertheless, he could

not from that time take the least exercise, without being out of breath. Having been obliged to make rather a long journey, he was taken, on his return, with a febrile disorder, cough and slight palpitation. A physician directed him to take an emetic, which produced some relief at the time; but, some days after, he was affected with somewhat acute pain in the chest, with cough and expectoration of blood. These symptoms continued for four or five days; some slight palpitations again occurred; they became more violent soon after, and he determined to enter the hospital Cochin, where he presented the following condition: face slightly swollen, of a violet red colour; skin, in general, soft and pale; legs a little infiltrated; tongue reddish on the edges; cough frequent; respiration difficult, threatening suffocation in the horizontal posture. The attempts which the patient made to cough occasioned acute pain in the whole chest, and more particularly in the back: the expectoration was abundant, frothy, and liquid; the pulse full, developed and vibrating; the pulsations of the heart were violent, and even felt in almost the whole extent of the chest.

A single blood-letting produced much relief. The next day the pain in the chest had diminished, and the palpitations were less frequent; the expectoration ceased to be bloody; but the pulse preserved a slight degree of vibration. This state was sustained for seven or eight days: the infiltration of the lower limbs was removed; his sleep was tolerably good at this time, and the secretion of urine abundant; but the same symptoms having begun to return, about ten

days after the first bleeding, a second again procured some relief for several days.

The 17th of November, in the morning, infiltration of the limbs reappeared; the hand and arm were, for the first time, infiltrated; the face was but slightly coloured, but the lips were a little of a violet colour; the pulse was small and linear, frequent and always a little vibrating. All the symptoms exacerbated towards six o'clock in the evening; respiration became more and more oppressed, accelerated and rattling, the face swollen and violet coloured, the pulse hard and frequent: we applied a large blister to the chest, and prescribed a potion with ether and kermes.

The patient expired on the 28th, in the morning.

Inspection of the Body.—The right thoracic cavity contained nearly half a pint of turbid serum, strewed with albuminous flocculi: the lung of this side was healthy and free from all adhesion; the left lung was adherent at all points with the adjoining parts; its adhesions, especially with the pericardium, appeared of very long standing; its texture was hepatised; the pericardium adhered strongly to the heart, especially at the anterior surface; the heart was very large, of a rounded form, and did not present the least appearance of the apex: the left auricle was enormously dilated, and its walls three lines in thickness; the left ventricle had undergone such a dilatation, and its cavity was so much enlarged, that it would probably contain eight ounces of fluid; but the parietes did not present any thickening, except towards the inferior portion and towards the apex; they were soft, and easily torn; the interventricular septum was

more than an inch thick in almost the whole of its extent; its texture was much firmer than the rest of the parietes; the right auricle was in the natural state, but the ventricle of that side was, to use the expression, atrophied, and constituted at least a fifth part of the left ventricle. The fleshy columnæ were developed to nearly the size of a writing quill, and had contracted such adhesions between each other, that they filled the cavity of the ventricle, so that during life the blood could only permeate through their meshes. The mitral valve, at its adherent edge, presented a cartilaginous state; the aortic valve offered a similar degeneration at its middle part.

This case is very curious in relation to anatomy. We are not acquainted with a single fact of any similar disposition of the cavity and fleshy columns of the right ventricle. It is a singular circumstance, that the hypertrophy of these columns coincided with an *atrophy* of the ventricle itself, which was scarcely a fifth part of the size of the left.

SECTION III.

HYPERTROPHY OF THE AURICLES.

That we may not multiply cases unnecessarily, we shall not relate, in this place, any of hypertrophy of the auricles. This disease hardly ever exists simply, that is to say, distinctly from every other lesion of the other parts of the heart: we have given examples in many of the preceding cases. (See Nos.

28, 29, 37, 38, 47, 49, 50, 51, 56, 62, 75, 79, 80, 84, 85.) We need only repeat, here, that we have observed hypertrophy of the auricles under the triple form noticed when speaking of that of the ventricles; but we ought to avow, that the *aneurismal form*, or with dilatation, is incomparably more frequent than the other two. Several pathologists, also, and among others M. Laennec, assure us that they never met with hypertrophy of the auricles, not complicated with dilatation.*

SECTION IV.

SIMULTANEOUS HYPERTROPHY OF SEVERAL CAVITIES, OR OF ALL THE CAVITIES OF THE HEART.

We shall give examples of hypertrophy of each of the cavities of the heart: observation proves how rarely we meet with this disease affecting only one of the cavities of the heart. More frequently, several cavities are hypertrophied at the same time, and the form of the hypertrophy varies also in each of them. It would take up too much room to offer new examples of all the complications and combinations of this disease: we shall proceed, however, to relate two other cases, one of which will exhibit, at the same time, a hypertrophy of both ventricles, and the other an aneurismal hypertrophy of all the cavities of the heart, with dilatation and chronic inflammation of the walls of the aorta.

* De l'Auscult. Mediate, tom. ii. page 280, 281.

Case LXXXIX.

Hypertrophy of both Ventricles, with diminution of their Cavities.

Catherine Moreau, fifty years of age, of a lymphatic constitution, had frequently taken cold in her youth; at a more advanced age, she experienced almost constantly a dry cough, a fixed and deep pain at the left inferior part of the sternum: phenomena which are too frequently exasperated by domestic disappointment. Finally, a new catarrhal affection supervened, for which the patient entered the hospital Cochin the 25th of March, 1814. Her face was then slightly swollen, the eyes projecting, the lips discoloured, and the colour of the skin, in general, a pale yellow; there was a deep pain and sense of weight in the precordial region; the chest resounded sufficiently well; the pulsations of the heart, irregular and tumultuous, were not in harmony with the pulse; this absence of harmony, however, was not always constant; to precipitous and excessive palpitations, succeeded strong and frequent but regular pulsations, which were pretty nearly in harmony with those of the pulse; the pulse, most commonly small and yielding, presented, in the moments of exacerbation, hardness, tension and vibration; but, in a short time, resumed its first character; the difficulty of respiration was extreme, and the slightest exercise produced an insupportable oppression; the horizontal position was impossible; syncope occurred rather frequently.

This state continued, without any marked change,

until the 5th of April; but, in the evening of the same day, the anxiety, palpitations and dyspnœa augmented considerably. After a repast rather more full, and a walk a little longer and more fatiguing than usual, the face is slightly coloured; the eyes have become red, rather strongly injected, and weeping; the lips are pale, and somewhat livid; insupportable coldness has affected the extremities; a sense of strangulation has occurred, and the patient, after some efforts to cough, expectorates vermilion-coloured blood.

The 7th we perceived for the first time that the legs were infiltrated. The following days, the infiltration gradually increased, but the palpitations diminished in force and frequency.

The 25th the infiltration invaded the upper extremities and face; sleep has become impossible; the palpitations have resumed their former intensity, and the patient fears, at every moment, that she shall die of suffocation. The evening of the same day, the sputa were small in quantity, but tinged with blood; respiration is very short and stertorous: the patient fell into a comatose state, agony occurred, and the patient expired the next day, the 26th.

Inspection of the Body.—The body is enormously infiltrated: the muscles pale; the chest contains a large quantity of citrine coloured serum; the lungs and the pleura do not offer any alteration; the pericardium contains nearly two pints of a fluid perfectly resembling that in the chest; the heart did not appear much larger than in the natural state. The superior and external side of the right ventricle is loaded with soft yielding fat; the right auricle offers

a cavity double the natural size; and the thickness of its walls is nearly triple. The thickness of the parietes of the right ventricle is more than doubled, and this augmentation of nutrition is made at the expense of the cavity which is much contracted; the walls of the left ventricle are also much thicker than in the natural state: the cavity offers a contraction still more considerable than that of the right; the membrane which covers this cavity is hard, glossy, and fibro-cartilaginous; the mitral valve participates in this affection, and presents even some points of bony matter. The left auricle has nothing peculiar; the other viscera are in the natural state.

In this interesting case, hypertrophy had formed in both the ventricles, and at the expense of their cavities. You will remark that the internal membrane of the left ventricle is hard, and fibro-cartilaginous, which sufficiently indicates chronic phlegmasia, and you will comprehend, from this case, how the nutritive augmentation takes place concentrically. The obstacle to the circulation, in this case, was so considerable, that we ought not to be astonished with the extreme anxiety, suffocation, and infiltration which we observed during life.

Case XC.

Hypertrophy and Dilatation of all the Cavities of the Heart; Aneurism and Ossification of the Heart.

Delaire Marie Desiree, fifty-two years of age, of a melancholic temperament, had suffered, at the commencement of marriage, great depression of mind. In a short time, a deep-seated pain occurred in the

precordial region, with a sensation of weight and suffocation, and slight palpitations. These symptoms having increased, she determined to go to the hospital Cochin, the 29th of November, 1816.

At that time her face was pale and swollen, respiration short, stertorous, and panting; the least exercise occasioned dyspnœa nearly to suffocation, and increased the palpitations, the approach of night, or even the slightest contrarieties excited them; the pulsations of the heart were even sometimes so violent that the patient heard them, and they even hindered her from going to sleep.

The abdomen was a little swollen, and at times painful; the pulse discovered great variations, sometimes it was concentrated, but more frequently hard, tense and vibrating.

We prescribed blood-letting in the arm, and ten leeches to the left side of the chest. These means procured momentary relief; but the symptoms were soon renewed with the same intensity. In about fifteen days, the pulsations of the arteries became stronger, and the oppression more considerable, the respiration shorter, and even stertorous: finally, the expression was lost; the eyes, the lips, and the nose took on a violet tint, hiccough occurred, and did not cease until death, which happened the day after its appearance.

Inspection of the Body.—The lungs were perfectly healthy; the pericardium contained but little serum; the heart appeared of twice the natural size; the left ventricle and auricle were nearly double the common thickness and capacity; the mitral valves were healthy, excepting that they exhibited some

bony points. The right cavities of the heart were also much thicker and more capacious than in the natural state; the aorta, dilated at its origin, and still more at its curvature, presented ossific laminæ in various points of its extent; but especially near the heart; the external coats offered branches corresponding to the rupture of the internal and middle coats.

ARTICLE I.

GENERAL HISTORY OF HYPERTROPHY, OR NUTRITIVE IRRITATION OF THE HEART.

SECTION I.

ANATOMY OF HYPERTROPHY OF THE HEART.

When all the cavities of the heart are affected at the same time with hypertrophy, especially if they are at the same time dilated, the heart presents sometimes a prodigious volume, so great as to be even three or four times the size of the fist of the individual; its position and its form are then changed: it is commonly situated transversely, or almost in the cavity of the chest, of which it occupies a large portion; its form is in general rounded; its apex is obtuse and almost effaced; in cases of considerable dilatation it has, as M. Laennec observes, the form of a *pouch;* the muscular substance of the heart is of a red vermilion colour, and good consistence; the thickness of

the walls may be double, triple, and even quadruple that which constitutes the normal state; the coronary arteries are developed; sometimes one of them is incomparably more voluminous than the other.

Observation enables us to establish three distinct forms of hypertrophy.

The first form is that in which the cavities of the heart preserve their natural capacity, at the same time that their parietes are more or less thickened: this is *simple* hypertrophy.

In the second form the cavities are dilated and the walls thickened: this might be called *eccentric*, or *aneurismal* hypertrophy.

Lastly, the third form is characterized by thickening of the walls coinciding with more or less contraction of the cavities: to this we have given the name of *concentric* hypertrophy.

Aneurismal hypertrophy may be distinguished into two different species of aneurismal hypertrophy, one in which the parietes are thickened; and another in which they preserve their natural thickness, so that the hypertrophy is found to take place according to the extent and the circumference, or according to the surface.

Hypertrophy is very far from being uniform in the walls of the heart, in the septum and the fleshy columns: it varies in the ventricles and the auricles, in the left and the right ventricle.

Hypertrophy of the ventricles not unfrequently proceeds according to the natural course of nutrition, that is to say the thickness, more considerable at the base and at the middle part, gradually diminishes towards the apex. Nevertheless, in concentric hy-

pertrophy, the thickness is nearly the same at the apex as at the base. We have seen in analogous cases the left ventricle globular or spheroid, presenting an equal thickness, of nine or ten lines, throughout its whole extent.

In some circumstances the hypertrophy, more marked at the middle part, gradually diminishes towards the apex, and even towards the base; the thickness of the parietes may extend to fifteen lines even beyond. According to M. Laennec, "the absolute thickness of the parietes of the right ventricle is not, in any case, very considerable: he has never found it more than four or five lines."* Nevertheless, in our 88th case we may observe that this thickness is from eleven to sixteen lines. M. Louis has recently met with a similar case, which he has published in the *Archives de Medecine*.

Finally, it sometimes happens that we find in the same ventricle, one portion dilated and, at the same time, hypertrophied, and another contracted and hypertrophied; at other times one portion is thinned, whilst another is thickened. These are *mixed* states of disease. A great difference is sometimes observed between the parietes of the ventricles, especially those of the right, and the columnæ carneæ: these may be double or triple the natural size, while the parietes are not in the least, or but very little hypertrophied; at other times the hypertrophy of the parietes of the left ventricle seems to take place at the expense of the columnæ, which are either entirely obliterated, or scarcely visible. In the cases of hy-

* Auscult. Med., tom. ii. page 260.

pertrophy of the left ventricle, only that cavity appears to constitute the entire heart, and the right ventricle seems to be only a sort of appendix to it, as if the left ventricle had been hypertrophied at the expense of the right. The hypertrophy of the left ventricle generally involves that of the septum. Sometimes, however, a hypertrophy of the interventricular *septum* is observed, distinct from any change in the surrounding parts. In an individual, whose case we have cited, the fleshy pillars of the right ventricle were so much thickened and interwoven that there was hardly any cavity, and the blood could only filtrate through the narrow intervals between them. (Case 89th.*)

Hypertrophy affects not unfrequently both ventricles at the same time; it is not uncommon, however, to find them in the opposite state. When the right ventricle is thickened, for example, the left, less firm and less fleshy than natural, approaches to the normal state of the right ventricle, which would lead us to suppose that there was a kind of transposition of organs in these cases. (Morgagni, Corvisart, &c.) Whichever may be the ventricle hypertrophied, we may observe that the apex of the hypertrophous ventricle descends lower than the other.

We may observe in the auricles the three forms of hypertrophy which we have pointed out, but the most common is the aneurismal hypertrophy. The thickening is tolerably uniform in the whole extent of the walls; this uniformity is found more especially in the left auricle, which is owing, undoubtedly, to

* Morgagni has noted a similar case.

the circumstance that, naturally, the thickness of the parietes of the left auricle is more uniform than that of the parietes of the right, which possesses more fleshy and more numerous columnæ. The muscular fasciculi of the auricle conveying the veinous blood, are sometimes the exclusive seat of hypertrophy; the parietes, in their intervals, preserving the thickness which is natural to them. In some cases the walls of this auricle are so hypertrophied in every part, that they resemble those of the corresponding ventricle.

The whole of this description refers to hypertrophy exempt from complications; we should be careful not to confound with it the hardening or the softening of the heart, which are changes of its nutrition, while the hypertrophy is only an augmentation of it.

SECTION II.

FORMATION OF HYPERTROPHY OF THE HEART.

Blanchard, Senac, Morgagni, Corvisart, and many others since them, have justly compared the hypertrophy of the heart to the increase of nutrition, which takes place in all the organs, and particularly in the external muscles habitually submitted to undue exercise, which causes the blood to flow in large quantity into their texture. When from any cause the blood is obstructed in its course, it accumulates in the cavities of the heart, and distends them: it enters

in too great quantity, and reverts upon the coronary arteries. The heart, irritated by the presence of this increased quantity of fluid, redoubles its energies, struggles, as it were, with all its powers against the resistance which it meets with; but these violent exertions themselves have the effect to solicit a new afflux of blood into the texture of the organ; so that the effect soon begins to take part with the cause. Stimulated beyond measure, the heart augments in bulk and thickness, and acquires an energy of contraction proportioned to the development of its hypertrophy.

More voluminous and more fleshy than the right, the left ventricle, in contact also with a more quickened, irritating and nutritive blood, is naturally predisposed to hypertrophy, and we ought not to be surprised that this affection assumes its own choice of situation. The normal constitution of this ventricle is, strictly speaking, the first degree of hypertrophy.

Although less subject to hypertrophy than the left ventricle, the right is, nevertheless, not entirely exempt from it: whenever this disease appears, it is so little compatible at the outset with the natural organization of its ventricle, that authors (Morgagni and Corvisart among others) have thought themselves obliged, in order to explain it, to suppose a *natural organic predisposition*, to imagine a *transposition* of the ventricles. This is a convenient method of evading the difficulty; but, surely, to create such an hypothesis is not to resolve it. It is not probable that if the right ventricle be less frequently hypertrophied than the left, it is owing, in a great measure, to the nature of the blood which fills it, and the in-

frequency of the lesions of the pulmonary orifice and its valves?

If we were to suppose for a moment the presence of arterial blood in that ventricle, every thing else being equal, we should conceive that it was as subject to hypertrophy as the left ventricle. Nature sometimes realizes the supposition we have already made. This is what happens in those cases where, either by means of the foramen ovale, or in some other analogous manner, the left cavities communicate with the right, from which it results that a certain quantity of arterial blood is introduced into them. Hence, if we examine cases of this kind attentively, we shall see that they coincide with hypertrophy of the right ventricle. This is what took place, for example, in the patient, in the 88th case, where the hypertrophy of the right ventricle was truly enormous. M. Louis has observed a similar case, and almost all those which he has collected in his memoir on the communication of the right with the left cavities of the heart, tend to confirm our opinion on this mode of the formation of hypertrophy.* If the hypertrophy of the right ventricle take place according to the same process as that of the left, the same must also be the case with that of the auricles. It also occurs when, in consequence of a constriction of the orifices of the heart, too large a quantity of blood distends, stimulates, and irritates them, and causes them to assume a kind of nutritive excitation.

In general, it is the cavity nearest the obstacle to

* See this Memoir in the Arch. Gener. de Med., 12th Cahier, Decembre, 1805.

the circulation which is hypertrophied or dilated; but it may happen, however, to be a cavity more remote; although all the other cavities of the heart may be successively affected with the lesion in question, so intimate are the reciprocal connexions which unite them.

However it may be, it is evident that the blood is an indispensable element in the formation of hypertrophy. Its presence is a necessary condition; but by what mechanism does the blood, that liquid flesh,* according to the happy expression of Bordeu, concur in the process of *hypertrophication?* What operation of vital chemistry, what laws preside in the formation of hypertrophy? a problem which, evidently, does not admit of solution in the present state of physiology, and never will, until we have removed the veils which yet obscure our knowledge of the process of nutrition.

SECTION III.

OF THE CAUSES OF HYPERTROPHY OF THE HEART.

Corvisart has presented, in his beautiful work, a truly frightful catalogue of all the causes proper to produce either hypertrophy or the other diseases of

* The original expression, "chair coulant," is a beautiful illustration of the peculiar adaptation of the French language to express physical phenomena. Such examples continually occur, and will account, in a great measure, for the superiority of the French *Savantes* in almost every branch of natural history. C. W. C.

the heart. He divides them into hereditary, innate or accidental. It may be congenital, or acquired, primitive or consecutive; it may affect a concentric progress in its formation, or it may proceed in the opposite course.* Hypertrophy recognises for its immediate and proximate cause an irritation applied to the heart, of the same kind with those which Marandel, M. Cruveilhier, and others, have given the name of nutritive irritation. Too large a quantity of blood accumulated, either in the cavities or in the vessels of the heart, is the most common source of this irritation: consequently, all the causes capable of producing such an engorgement will be the real causes of hypertrophy: in this number we should reckon violent exercise of every description, exertions,† and all the professions which require it; the various passions, and especially those which vehemently augment the energy of the contractions of the heart and cause them to palpitate with force.

The influence of moral affections in the production of the organic diseases of the heart, is incontestably very powerful; but it would be to exaggerate a great deal, to attribute exclusively to the passions excited

* According to the ingenious comparison of Burns, the process of the formation of hypertrophy, with dilatation, is similar to that by which the uterus, during pregnancy, becomes dilated, developed and thickened; but it is hardly possible to admit a perfect identity between these two phenomena, which, nevertheless, are, perhaps, not without some analogy.

† Whoever has reflected for a moment upon the manner in which the efforts of the heart take place, will not be astonished if they should often give rise to hypertrophy and aneurism of the heart. In fact, in every effort, but especially in those which are very considerable, the large vessels are violently compressed, and the column of blood which they contain is forced back, the one portion towards the heart, and the other towards the capillary systems.

by our revolution, the frequency of the diseases of the heart at that period. If they appeared at that time, and appear in the present day more common than ever, it is because the art of observing and discovering them has made more brilliant progress.

The diseases, whether acute or chronic, of the respiratory organs, pneumonias, tubercles, hydrothorax, all those, in short, capable of producing an obstruction to the circulation intermediate between the right and left cavities; the indurations and vegetations of the valves of the heart; the contraction of the aorta; its aneurismal dilatations, and the ossifications of its membranes, are new causes of hypertrophy of the heart. We might say as much of the durations of the vertebral column, and of all those deformities which diminish the capacity of the chest.*

SECTION IV.

OF THE INFLUENCE OF HYPERTROPHY OF THE VENTRICLES ON THE OTHER ORGANS, AND ESPECIALLY ON THE BRAIN AND LUNGS.

Nothing is better demonstrated in physiology, in the present day, than the influence of the left heart on the circulation of the encephalon: we might, consequently, advance *a priori*, that one of the immediate consequences of hypertrophy of the left ventricle would

* The greater number of those affected with gibbosity, are finally attacked with some disease of the heart. We might furnish numerous cases for the support of this assertion.

be a predisposition to apoplexy, to encephalitis, and, in fact, to all the cerebral irritations. What reason leads us to foresee, observation confirms in the most positive manner. In fact, the greater number of patients, in whom we have been able to verify the existence of hypertrophy of the left ventricle, have presented symptoms of cerebral congestion, and many have even died of it. Three illustrious physicians, torn from science by frightful apoplexy, Malphigi, Cabarris, and Ramazzini were evidently affected with hypertrophy of the left ventricle. M. Richerand has, therefore, with reason, established the following principle; that this affection is a predisposition more nearly allied to apoplexy than what is called the apoplectic constitution itself. We might even add that, in general, persons who present the apoplectic constitution indicated by authors, are, at the same time, remarkable for the volume and thickness of their heart.

There is one circumstance which may weaken, to a certain point, the too powerful impulse of the hypertrophied left ventricle on the circulating system of the encephalon, and this is the contraction of the commencement of the aorta. We may conceive, in fact, that this disposition offers a kind of resistance, which absorbs, if we may be allowed to say so, a part of the shock communicated by the ventricle to the column of blood directed towards the brain. We should not, however, after the example of some modern authors, whose authority is very respectable in other particulars, attribute to this cause an unlimited efficacy.

For the same reason that hypertrophy of the left ventricle predisposes to apoplexy, it predisposes

equally to the other active hemorrhages. These patients, also, are in general very subject to epistaxis, for example.*

In having demonstrated the influence of hypertrophy of the left ventricle on the brain, we have proved that of hypertrophy of the right ventricle upon the lung. Because, in the same manner as the encephalon receives directly the shock of the flow of blood which the left ventricle throws into the aorta, so the lungs receive immediately the impulsion communicated to the column of blood which the right ventricle projects into the pulmonary artery. Consequently, when the parietes of that organ have augmented in thickness and energy, they impress on the pulmonary circulation a proportionate activity, overcoming at once the resistance of the vessels, and hence the hemorrhagies and *pulmonary apoplexies*, if we may so say, which take place after the same manner as in apoplexy, properly speaking, and in cases of hypertrophy of the aortic ventricle. It is to this cause we must refer the hæmoptysis which we have observed in some of our patients. The hemorrhagic congestions alluded to are essentially active; we should not confound them with those which are produced by any obstruction to the circulation, as those which occur, for example, in cases of contraction of one or

* As the vascular system of the eye is a dependence of that of the brain, the hypertrophy of the left ventricle produces an effect on that organ analogous to that produced on the encephalon: Hence the injected and brilliant state of the eye, and sometimes inflammation. Professor Ferta, of Bologne, has noticed watering of the eye as one of the effects of the diseases of the heart. Does there exist any relation between the phenomenon and the ossification of the ophthalmic arteries, so frequently met with in cases of hypertrophy of the left ventricle?

more orifices of the heart. The first are arterial, if we may so speak, the second venous: the latter are the result of the stasis and reflux of the blood in the capillaries; the former are, on the contrary, produced by the too impetuous afflux of the blood in the capillary systems. We should be able to distinguish these frightful cerebral, pulmonary, or other hemorrhagies, and those sudden congestions of blood, from that subapoplectic state, or from that expectoration of dark coloured blood, or species of bloody sanies, which announces the deplorable death of those affected with great embarrassment of the circulation.

SECTION V.

OF THE SIGNS AND DIAGNOSIS OF HYPERTROPHY OF THE HEART.

We have seen to what anatomical characters we must refer hypertrophy of the heart; but it is not enough to know the anatomical symptoms of a disease, symptoms which we can only obtain after death; it is necessary that we should know also the physiological signs, by means of which we are enabled during life to confirm the existence of hypertrophy. These symptoms are of two orders: some of them consist of the modification which the organ diseased has suffered in its action and in its functions; the others are the various lesions produced by the influence of the organ diseased on the other functions of the economy. The first, and most important, are the idiopathic

symptoms; the others we will call, if you please, the sympathetic or remote symptoms.

A. *Idiopathic Symptoms of Hypertrophy of the Heart.*

To discover these symptoms we must employ three of our senses: the sight, the touch and the hearing. These symptoms should be sought for in the modifications which supervene in the impulsion, extent, sound, and rythm of the pulsations of the heart,* and are never well marked, excepting so far as the hypertrophy has attained a certain degree of development.

1st. *Symptoms furnished by the sight.*—The motions of the heart are visible in a greater or less extent of the chest, according to the volume of the hypertrophy.—Sometimes the thorax is shaken as high up as the left clavicle, the epigastric region agitated, and the clothing or bed-clothes of the patient thrown upward.

2d. *Signs furnished by the touch, either immediate or mediate.*—If the hand be applied over the precordial region, it is struck, and, as it were, rudely repelled, by strong, abrupt, diffuse pulsations; sometimes perfectly detached and superficial, at other times deeper and more concentrated. It seems, in some cases, as if the whole of the heart struck the hand; whilst, in others, it presents only the apex. Sometimes a jarring tremor is felt in the thoracic pa-

* It is evident that we ought to explore the heart in its tranquil state, if we do not wish to expose ourselves to the risk of committing errors of diagnosis, always unfortunate for the patient, and frequently for the physician.

rietes for a great extent, and even in the posterior part of the chest. In some cases it seems as if the hand not only touched the pulsations of the heart, but also that it makes them heard, as if it answered the purpose of the stethoscope. If, instead of exploring the contractions of the heart with the hand, we explore them with the cylinder, we shall obtain perhaps a still more precise idea of their impulsion. That instrument renders it very sensible, even when it escapes the exploration of the hand: we have recognised hypertrophies by means of it, which we never should have been able to do in any other way.

3d. *Signs furnished by the hearing.*—We may distinguish them into those furnished by percussion, and those furnished by immediate or mediate auscultation.

1st. If we strike on the precordial region it gives an obscure or flat sound, in an extent proportionate to that of the hypertrophy. By this simple mode of exploration, Corvisart says he has frequently ascertained with accuracy the size of the heart. We must acknowledge, however, that percussion is far from being a method so valuable and faithful as auscultation.

2d. We might say that, in general, hypertrophy has the effect to weaken the intensity of the sound, which accompanies the pulsations of the heart. But it is important here to distinguish those cases in which the hypertrophy is simply accompanied with a contraction or dilatation of the cavity.

In the simple hypertrophy, the sound produced by the contractions of the heart is more dull and more profound than in the natural state: it is more

prolonged, because the duration of its contraction is augmented in consequence of the degree of hypertrophy: it is seldom heard excepting in the precordial region itself. This sound is yet more obscure in hypertrophy with contraction of the cavity: it contrasts with the force of the impulsion. Hypertrophy, with dilatation, is, on the contrary, characterized by the increased intensity of the sound of the pulsations of the heart; a phenomenon which depends upon the dilatation, and not the hypertrophy. In this case the contractions are sonorous and strong; they are propagated through a great extent of the chest, and are heard sometimes even at its posterior part, and, in fact, resemble the blows of a hammer.

We can ascertain the rythm of the pulsations of the heart with equal precision, either by sight, touch, or hearing. But auscultation is a mode much more sure and exact than the other two, and hence the reason why we have deferred speaking of the varieties of this rythm until the present time. It is certain that hypertrophy, exempt from every complication, scarcely alters the rythm of the contractions of the heart; they preserve their regularity, and are, perhaps, a little more frequent than in the natural state. Nevertheless, as they are also more prolonged, it hence results that their number seldom exceeds that which constitutes the natural state.

It is only at intervals that the pulsations of the heart become much more frequent and stronger than in the ordinary state. It is then that patients complain of what they call *palpitations*. Hypertrophy, in fact, disposes to that affection, which hardly ever fails to be developed, if the patients take somewhat

too violent exercise, or if they suffer more than common moral emotions. When the intermissions and great irregularities of the contractions of the heart are observed in hypertrophy, it is because this coincides with other lesions, and among others with a contraction of the orifices, or an *aneurism* of the aorta.

It is not sufficient to have pointed out the symptoms which announce hypertrophy of the heart in general, it is necessary, also, that we investigate those which characterize the hypertrophy of each of the cavities of the heart in particular; a kind of diagnosis which Corvisart has regarded as very uncertain, and even impossible, which, however, in the present day, can be established in the most precise manner. But, before occupying ourselves with them, let us examine the second order of the symptoms of hypertrophy.*

B.—*Sympathetic, general or common, symptoms of Authors.*

1st. *Exploration of the circulation.*—We have already observed that persons affected with hypertrophy of the heart, suffer at intervals more or less violent and prolonged palpitations. The pulse presents many modifications relative to the form, degree, and complications of hypertrophy. The latter derange the proper pulse of hypertrophy so much that it can hardly be distinguished; we shall, therefore, make

* Among the number of idiopathic, but doubtful symptoms, of hypertrophy, we might mention the sensation of weight and oppression, which the patients complain of in the precordial or diaphragmatic region.

an abstract of them here. Now, in *pure* hypertrophy, the pulse is in general regular, but harder and stronger than in the ordinary state. Is the hypertrophy simple, without any dilatation of the cavity, or with dilatation not sufficient to have weakened the resilliency of the muscular fibres? the pulse is full, very distinct, free, tense and *vibrating*.

In hypertrophy, with contraction of the cavity, the pulse preserves its hardness and stiffness, is but little developed, and somewhat compressed or embarrassed. It is not necessary to observe that the examination of the pulse only furnishes the symptoms of the hypertrophy of the aortic ventricle, and is no resource in the diagnosis of the hypertrophy of the right ventricle.

2d. *Exploration of the respiration.*—In general, respiration is little disturbed in pure and simple hypertrophy, moderately developed. But when the disease has greatly increased the size of the heart, so that it occupies a large part of the space destined for the lung, respiration is impeded in a very remarkable manner. In truth, in such cases, it is rare that there does not exist some other cause of dyspnœa, to which the hypertrophy itself is frequently consecutive. There is one form of hypertrophy which is calculated to induce considerable disturbance of respiration; we refer to that with contraction of the cavity. We may conceive, in fact, that when this is very considerable, the same phenomena must result from it, which would, if one of the orifices of the heart had been contracted. (See the chapter on these contractions.)

3d. *Exploration of locomotion and enervation.*—Moderate hypertrophy, without complication, far from weakening these two functions, gives them greater energy. It is only in cases where the disease, either by the form which it assumes, or by its enormous development, disturbs, in a remarkable manner, the circulation and respiration, that the muscular and nervous functions suffer a proportional weakness; as we have already explained when treating of the lesions of the valves.

The picture we have drawn is far from perfectly resembling that of authors. But we can say, with truth, the symptoms of hypertrophy, or of active aneurism, commonly called general, have never been submitted to the test of physiological analysis, and on this subject, every author has committed grievous mistakes. Look into their works, and you will find that they enumerate as symptoms of hypertrophy, or *active aneurism*, dyspnœa, suffocation, violet injection of the face, swelling of the lips, and of all the venous capillaries in general, passive hemorrhages, and serous infiltration. This is, however, an error, a kind of physiological contradiction not easily accounted for; these symptoms evidently indicate an obstruction or embarrassment of the circulation: now how can we reconcile this difficulty of the circulation with hypertrophy and *active aneurism of the heart?* Far from interrupting the current of the circulation, this state of the heart, on the contrary, is evidently calculated to impress new energy upon the course of the blood. Can you suppose, in fact, that hypertrophy is capable of weakening the current of the circulation? You might as well say then that the

large shoulders of the porter, the massive arms of the baker, are without vigour and energy, and weak in consequence of their development, or hypertrophy. How can you attribute to active aneurism, or hypertrophy, symptoms of obstruction to the circulation? Have you forgotten that in all cases of pure and simple hypertrophy, the patients have a full, vigorous and vibrating pulse; that the movements of the heart are regular and full of force; that the face is bright red; that they are subject to all the active hemorrhagies? But will you say, we have frequently met with the symptoms of obstruction to the circulation above mentioned, in cases of hypertrophy? Undoubtedly. But could you draw this strange conclusion, that hypertrophy of the heart is a cause of embarrassment to the circulation? If you had reflected upon this subject more attentively, you would have observed that, in the cases of which you speak, the hypertrophy is complicated with another lesion, for example, contraction of the orifices, or other affections capable of opposing an obstacle, either mechanical or vital, to the course of the blood. You would certainly have confounded the symptoms of one disease with those of another, or rather you would have taken the effect for the cause; because in the cases where there exists an obstacle to the circulation, the hypertrophy, the aneurism which you call active, is a consequence or *accident* of that obstacle. So that if you refer henceforth to *active aneurism* all the symptoms, instead of referring them to the obstacle in question, you will fall into an egregious error; since you take one of the *accidents* of the disease for the disease itself, or the point of departure of all the

other symptoms. We cannot insist too strongly on this subject: because this error of authors, deeply impressed on many minds, is also that of the physicians of the present day, and of some of the most estimable among them. Let us endeavour then to distinguish these two things; namely, hypertrophy, and a mechanical or vital obstacle to the circulation. The first, cannot of itself give rise to the symptoms which announce a great impediment to the course of the blood.* This opinion is not purely theoretical; it is the expression of facts, and of accurate observation. Call to mind, in fact, the patients of the seventy-fifth, seventy-sixth, and seventy-seventh cases, and many others; examine with attention the cases of pure and simple hypertrophy contained in other works, and you will be convinced that in these cases, we do not meet with the *facies propria*, the infiltration, and the other symptoms of an obstacle to the circulation; you will see, on the contrary, that the sanguiferous system enjoys a greater activity of movement; and will hence explain to you how it happens that many patients are carried off, not by hypertrophy itself, but by either hemorrhagic or inflammatory affections of the brain, lungs, &c., affections which, as has been demonstrated above, are connected with hypertrophy of the heart, by the most intimate relation.

* The only case in which hypertrophy may become an obstacle to the circulation, is that in which it affects the part from without inward, and, following, as we may say, a *centripetal course*, invades a portion of the cavity, and contracts it to such a point that the passage of the blood through it is considerably interrupted. This case is equivalent to a contraction of some one of the orifices of the heart; but is not by any means so common.

C. *Distinctive Symptoms of Hypertrophy of each of the Cavities of the Heart.*

1st. *Symptoms of hypertrophy of the left ventricle.* —The pulsations of the heart, the characters of which have been above analyzed, are particularly felt in the region of the cartilages of the fifth and sixth ribs: this is the situation in which they occur with the greatest intensity; they become weaker in the remaining portion of the left side, but are, nevertheless, more marked there than in the right side. Lastly, to these symptoms we must also add those furnished by the examination of the general circulation. But, as we have already mentioned elsewhere, individuals affected with hypertrophy of the left ventricle, have the face coloured red or vermilion; the eyes brilliant; the pulse strong, hard, vibrating and full, at least when the cavity is not contracted; they are subject to active hemorrhagies, especially to bleedings from the nose, to vertigo and other symptoms of cerebral congestion which not unfrequently destroys the patient.

2d. *Symptoms of hypertrophy of the right ventricle.*—Contractions, the characters above described, instead of being felt in the interval between the fourth and fifth ribs, are much more pronounced under the inferior part of the sternum, and, in general, more marked in the right than in the left side of the chest.

We shall cease to be astonished that the pulsations of each ventricle may be specially felt in a determinate place, corresponding to the situation of each of them,

if we will but reflect that some patients can distinguish very well of themselves on which side the heart beats the strongest. It was thus that the patient in the ninety-first case, for example, had observed, and assured us that the palpitations with which she was troubled, were much more violent in the right than the left side; a symptom which corresponds with the disease of the right auricle. Another symptom of hypertrophy of the right ventricle is the expectoration, of a pure and vermilion coloured blood at intervals more or less frequent. This *active* hemoptysis is to hypertrophy of the right ventricle what apoplexy, properly speaking, is to that of the left ventricle. We have said, after Lancisi, that the pulsation or the *fluctuation* of the jugular veins, is a symptom of some affection of the right ventricle. This remark is not without foundation; but the jugular or venous pulse is never observed, excepting in the cases where the dilatation accompanies the hypertrophy, and when the auriculo-ventricular orifice, being much enlarged, can no longer be completely closed by its valve: hence the afflux of blood in the large veins during the contraction of the right ventricle. We shall renew the consideration of this phenomenon hereafter, when speaking of the dilatation of the heart.

Having given the symptoms of each of the forms of hypertrophy, whether it affect the left ventricle, or whether it affect the right, it is evident that we are ignorant of those which characterize the various combinations of these several forms of hypertrophy from each other, and those which indicate that the

disease is located in both ventricles at once. An individual, for example, may be simultaneously affected with aneurismal hypertrophy of the right ventricle, and with simple hypertrophy, or even a certain degree of contraction of the left: in the first case we shall meet with strong, clear and sonorous pulsations, to be heard more particularly in the inferior part of the sternum; and in the second, contractions equally powerful, but dull and concentrated; which we shall hear, in the interval, between the cartilages of the fifth and sixth ribs.

As to the hypertrophy of the auricles, we shall be able to recognise it by the more or less stifled sound which accompanies their contractions. As this hypertrophy is, farthermore, almost constantly consecutive to a lesion of the valves, or an obstacle to the circulation, it will be sufficient, in order to ascertain it, to recognise the existence of such an obstacle. This hypertrophy, however, is not very important to ascertain, and is much less dangerous of itself, than from the cause which produces it.

In finishing what we have to say respecting the symptoms of hypertrophy of the heart, it is well to add that auscultation mediate is, in general, preferable to auscultation immediate; and that the signs furnished by this invaluable mode of exploration, however precise or faithful they may have been, would prove the source of erroneous diagnosis, if they had been collected carelessly or with too great precipitation, and if we did not take into account all the complications with which hypertrophy may be accompanied; such as congestion of blood, soften-

ing and hardening of the texture of the heart, contraction of its orifices, and diseases of the aorta, lungs, &c.

SECTION VI.

PROGRESS AND TERMINATION OF HYPERTROPHY OF THE HEART.

It is impossible to establish any precise law relative to the progress of this disease. The reason of this, as may be easily conceived, is because the hypertrophy is very rarely primitive, but more commonly consecutive, and, consequently, subordinate in its course to the progress even of the causes and various lesions which might have produced it; subjects which have been already discussed, and which the reader ought to have present in his memory. We shall only say here that the progress of hypertrophy of the heart is, in general, slow, tardy, and *chronic;* but that in some cases, however, it affects a more rapid, active, and, as it were, *acute* form.

We have already said that hypertrophy of itself is rarely dangerous, and perhaps never mortal; but we have seen that it exercises on many organs, and especially on the brain and lungs, such an influence as to lead even to a fatal result, numerous examples of which have been already related.

Farthermore, this termination, as well as the progress of the nutritive irritation, are singularly modified according to an affinity of individual circum-

stances, and according to the diseases which accompany or are, in some measure, connected with it. We cannot, therefore, too frequently repeat that it is on these last, particularly, that the physician should fix the whole of his attention, and that frequently the hypertrophy does not merit on its own account any thing more than a secondary consideration.

SECTION VII.

TREATMENT OF HYPERTROPHY OF THE HEART.

If our ideas of this disease are perfectly understood, it will be readily foreseen what the treatment should be. It is beyond all doubt, in the first place, that in cases, so frequently occurring, in which hypertrophy is purely consecutive, our therapeutic measures should be directed against the disease on which it depends. It is no less clear, that we should commence in all cases by removing the known causes of the disease. As to the agents, which we ought to employ against the hypertrophy itself, they must, for the most part, be sought for amongst the debilitants and antiphlogistics. Have we not proved, in fact, that the necessary result of the hypertrophy of the heart is to communicate a too violent impulse to the mass of the blood, to impress too violent shocks on the whole arterial system, and to terminate very frequently in various active hemorrhagies? Consequent-

ly, the sedative method, and blood-letting, naturally present themselves as the only true methods proper to combat the disease which occupies us: but we have considered this mode of treatment sufficiently in detail in various parts of this work, and especially when speaking of the phlegmasia and aneurism of the aorta, so that it will be only necessary to refer the reader to it: to renew the exposition of this mode of treatment would be a loss of time entirely wasted in wearisome repetitions: we shall only add that physicians ought, perhaps, to recur with more hardihood than they have been accustomed to do, to the method of Valsalva and of Albertini. It has been satisfactorily ascertained, from numerous cases, that this has cured a number of hypertrophies of the heart of the first and even of the second degree. There are, however, few patients endowed with a sufficient quantity of patience, and confidence sufficiently firm to resign themselves to all the severity of the method of treatment which we recommend. We are so much the more led to approve this method, as a valuable fact, recorded by Professor Laennec, seems to demonstrate that, by its employment, the heart diminishes considerably in volume, becomes, in some manner atrophous, as happens with the external muscles which have been long condemned to inaction.*

After having studied hypertrophy of the heart, we should afterwards occupy ourselves with *atrophy*, or *hypertrophy* of that organ: this would be following the most natural order, and the one which

* De l'Auscult. Med., tom. ii. page 293, et Suivantes.

seems to present itself in the first instance. However, as dilatation of the heart has been a matter of some discussion in the preceding chapter, we have thought it would be proper to examine this new species of disease before we begin with the history of thinness and *atrophy* of the walls of the heart.

CHAPTER II.

OF DILATATION OR ANEURISM OF THE HEART.

PRELIMINARY CONSIDERATIONS.

Lancisi first designated dilatation of the heart by the name of *aneurism*, or rather consecrated an expression which had been already employed by Baillou. Morgagni employed the term dilatation and *aneurism* indifferently: Corvisart has also given the name of *aneurism* to the dilatations of the heart, in acknowledging, with Morgagni, that this denomination was far from being perfectly exact, if we wished to denote by it a disease of the heart, perfectly similar to the arterial dilatation, which surgeons describe under the name of *aneurism*.

Corvisart continued, however, to distinguish the dilatations of the heart by the name of *aneurism*, and, what had not been done before, he established two distinct species; one of which he designated by the term *active aneurism*, and the other by the term *passive aneurism*. In the first species, the parietes of the heart are dilated, and at the same time thickened, the force of the organ being augmented; in the second, the cavities of the heart are evidently dilated,

but they are also wasted, and the action of the organ is weakened. This double disposition of the parietes of the heart has been long since observed and demonstrated: Morgagni, especially, has cited numerous examples; but it is surprising that another form of dilatation has escaped the sagacity of this illustrious anatomist, as it had been concealed from the investigation of his predecessors, and as it eluded the researches of his most celebrated successors. The form we refer to is that in which the parietes of the heart are dilated without having suffered any change in their natural thickness, and respecting which we have collected a great number of observations.

But our own researches on the dilatations of the heart have given rise to some doubts respecting the doctrine of the celebrated professor of chemical medicine, and have changed the ideas we had derived from the learned lectures of that illustrious physician, who was one of our first masters. We recollect especially that in treating of aneurism with thickening, we have not sufficiently regarded the nature of the latter, nor the diseases with which aneurism has been complicated; and that there has, in truth, resulted from this kind of negligence a discordance between observation and the general results which have been deduced from them; a contradiction, if we may be permitted to say so, between facts and principles.

Lastly, we ought to recall here what we have said in the preceding section; namely, that there has been some error in not distinguishing *aneurism* and dilatation of the heart from hypertrophy; and, that active or passive aneurism is not a simple but a compound

disease, formed, in the first instance, of hypertrophy and dilatation, and, in the second, of dilatation and wasting of the parietes.

These general remarks being premised, we shall proceed presently to give the history of the aneurism of the heart; an expression which, to us, is absolutely synonymous with dilatation, and to which we, consequently, attach no other idea than that which its etymology denotes.

ARTICLE I.

CASES OF DILATATION, OR ANEURISM OF THE HEART.

In the preceding section we have given a great number of cases of the two forms of dilatation of the heart; namely, that with a natural state of the parietes, and that with thickening of those parietes. We know, indeed, that these two kinds of disease constitute the hypertrophy which we have called aneurismal:* we shall content ourselves then in reporting here an example of the third form of dilatation which we have observed, or that with wasting of the pari-

* The cases 78 and 79, to be found in the preceding section, and a great number of those related in the first part of this work, appertain to dilatation with thickening of the parietes; a compound disease, which might, with equal propriety, be called aneurismal hypertrophy, or hypertrophic aneurism.

Case 80, and those marked 86 and 87, are examples of dilatation of the ventricles of the heart, without any change in the thickness of their parietes. We would, if space permitted, offer many other similar cases.

etes. We should choose among the facts of this kind which we have collected, a case in which this kind of dilatation was ascertained by auscultation, and announced a long time before we were permitted to confirm its existence by an examination of the body.

Case XCI.

Dilatation of the Ventricles with wasting of their Parietes; Intestinal Ulcers; Pulmonary Tubercles, &c.

Jean Nicholas Mougenot, thirty-one years of age, tailor's apprentice, ex-grenadier of the guard, of a lymphatic constitution; long and narrow chest, skin white and delicate, hair red, of a mild disposition, entered the hospital Cochin on the 30th of July, 1822. He said that he had suffered several severe attacks of catarrhal affection, accompanied with spitting of blood; he had emaciated very much, especially within six months, and presented, in other respects, the following phenomena:—cough, thick, copious, mucous greenish sputa, not streaked with blood, with which he had been troubled for six weeks; loss of breath, and dyspnœa on the least exercise; rattling with gurgles is heard, and very strong pectoriloquy in almost the whole of the right side of the chest: in several other parts of the chest the rattle resembles a slight clapping; the impulse of the pulsations of the heart are very weak; the pulsations of the ventricles are clear, somewhat analogous to the effect produced by tapping lightly on the head of a drum, differing but little from those of the auricles, excepting that they are a little more prolonged; they are heard even at the posterior part of the chest. Tongue dry,

and red; thirst, loss of appetite, nausea, and sometimes vomiting after the fits of cough; diarrhœa without colic, heat of the skin, night sweat, pulse small, frequent and feeble; hectic fever, simulating an intermittent quotidian; insomnia. (Gum, edul., tinct. quart.)

12th of August, a pleuritic stitch occurs in the region of the right heart, pectoriloquy in both sides of the chest, gurgling or panting respiration; the pulsations of the heart are weak, without impulse, and always clear; prostration, paleness and discoloration of the skin, threatening suffocation. These symptoms continued until the 17th:—faint turns, frequent dimness of sight, agony, tranquil death on the night of the 17th.

Inspection of the Body eighteen Hours after Death.

1st. *Chest.*—In the right side of this cavity were false membranes of variable consistence: at the base and in the middle they are soft, pulpy, and injected; they are considerably thickened towards the summit, where their presence seems destined to prevent the effusion of the tubercular matter in the sac of the pleura. In fact, the whole of the right lung forms a large mass, of the consistence of liver, divided in its superior portion into a great many excavations; cut in several different parts, its substance presents a granulated substance, not in the least spongy; at the surface of the incisions, are seen the orifices of a great many of the bronchial tubes. This substance is of a grayish black, it is traversed by semi-transparent laminæ somewhat lardaceous, which appertain to the thickened pleura covering the pulmonary fissures.

The left lung less voluminous than the preceding, is crepitant at its anterior edge, whilst its posterior is swelled with serum, and contains granular tubercles; we find here and there, in this lung, many tubercular deposites of moderate extent; the bronchial ganglions, voluminous and black are transformed, in the centre, into a white pultaceous substance; the bronchiæ are red, covered with mucus, and grumous matter proceeding from the pulmonary excavations; the left side of the chest contains a moderate quantity of lemon coloured serum; but few adhesions are observed. The heart is large for a patient with phthysis: its parietes are soft, flabby and depressed; the right ventricle is a little larger than in the natural state; the left ventricle is a little larger than the right. This aneurismal dilatation takes place at the expense of the thickness of the parietes, which hardly exceeds that of the parietes of the right ventricle; the auricles do not present any considerable change either in their extent or their thickness; their valves present a violet red colour. The pericardium contains a little serum.

2nd. *Abdomen.*—The liver is very large and less compact than the right lung of the subject, a little softened and very easily torn; the stomach is very large, and presents on its internal surface a violet and, as it were, an almost *aneurismal* red colour; the external layer of the mucous membrane is softened, and easily torn, leaving underneath reticulated patches of injected vessels; the jejunum and duodenum offer a red colour, and are injected similarly to that of the stomach: this redness is continuous, whilst in the ilium it is interrupted by spaces more or less

considerable, where it entirely fails; the intestinal parietes are soft and infiltrated; the large intestine, very long, contains semi-liquid substances, and is generally injected: very numerous ulcerations are met with, especially in the cœcum, where they are much distended and elongated.

3d. The cranium has not been opened.

The nature of the ventricular pulsations, their extent, the clear sound, and scarcely perceptible impulse, were sufficient to announce, from the first, the existence of dilatation, with wasting of the ventricles; and the inspection of the body has perfectly confirmed such a diagnostic. These signs deserve to be classed among those which characterize the passive aneurism of Corvisart in the most positive manner.

ARTICLE II.

GENERAL HISTORY OF DILATATION AND ANEURISM OF THE HEART.

SECTION I.

ANATOMICAL CHARACTERS, AND VARIOUS FORMS OF DILATATION OF THE HEART.

The only anatomical character which constitutes, if we may be allowed the expression, the disease which we are considering, is the enlargement of one

or more of the cavities of the heart. It is very true, that, at the same time that the parietes are dilated, we find them frequently either thickened or wasted; but this thickening, or wasting, is not the inseparable condition of aneurism; they do not constitute it; analysis would lead us to distinguish and view them as particular diseases which complicate the other affections of the heart. It is according to the states in which the parietes may be found that we shall admit three distinct forms of dilatation of the heart, as we have admitted three forms of hypertrophy, founded on the condition of the cavities of that organ.

The first form of dilatation is that in which the parietes are at the same time dilated and thickened: this is the most frequent, and constitutes the *active aneurism* of Corvisart, or our second form of hypertrophy. (See the preceding chapter.) The second form is that in which the parietes are dilated as well as thinned; it is less frequent than the preceding; and constitutes the *passive aneurism* of Corvisart. Lastly, the third form is distinguished from the preceding in this, that the dilated parietes preserve their natural thickness. This form, which we were the first to describe, is also almost as frequent as the first, and might have been designated by the name of simple dilatation.*

To these three forms of dilatation we might add a fourth, under the name of *mixed dilatation*, because it is a compound of the others. In this species, the

* It is yet more surprising, as this form of dilatation, until the present time, has not been either the subject of a division, or of any particular denomination, although we find numerous examples of it in various collections of cases, and especially in the works of Morgagni.

parietes of the dilated cavity are thickened in some points of their extent, thinned in others, and in the rest preserve their natural thickness; M. Portal appears to have observed it.

The dilatation of the cavities of the heart presents various degrees of extent: when it is very considerable, especially if it be complicated with hypertrophy, the heart acquires an immense size, changes its form, becomes rounded and enlarged, and resembles, as we have already said, a kind of pouch.

Some authors have mentioned, as characteristic of dilatation of the heart, the softening and alteration of colour of its muscular substance; but we shall say of these characters what we have said of the thinness and thickness of the parietes, that they constitute true complications which may exist without dilatation, as this may exist itself without meeting with the others. We shall presently see why, in the great dilatations of the heart, we find its veins distended, its texture swelled with blood, and of a more or less deep red tint.

SECTION II.

FORMATION AND CAUSES OF DILATATION OF THE HEART.

A phenomenon which attentive observation does not permit us to overlook is, that all the hollow organs dilate more or less considerably, when, in consequence of any obstacle, the fluids or solids which they are destined to contain accumulate in their cavity, and react on their parietes. The organ allows of distention so much the more readily, as its parietes are endowed with less energy, or the causes of dila-

tation are more active. If these causes are not permanent, the organ whose resistance has been momentarily overcome, soon resumes its former state; so that if the causes be, on the contrary, continuous, or act too frequently, the dilatation of the organ becomes comitant, no longer disappears, and constitutes a true pathological state. These reflections, which have been furnished us by very numerous facts, and which have served to explain the dilatations of the aorta, apply most admirably to those of the heart. Notwithstanding the structure of the heart and the aorta presents the most remarkable differences, the mechanism of their dilatation is essentially the same; and as we have seen that the aneurism of the aorta recognises for its immediate cause the accumulation of blood in its cavity, and the lateral reaction of this liquid, so the aneurism of the heart takes place by the action of the blood which distends its cavities, and tends to enlarge its parietes, by removing them from the axis or centre of these same cavities. If the obstacle which determines the distention of the cavities of the heart disappear at the end of a certain time, and is not again renewed, the distended parietes react and return to their first condition. This is what has taken place, for example, in the cases in which an acute disease of the lungs has determined a stasis or accumulation of blood in the cavities of the heart situated behind them; but if the obstacle persist indefinitely, or be repeated without cessation, as in those professions which require exertions to be constantly renewed, or in the contractions of the orifices of the heart, the reaction of this hollow muscle is overcome by the redoubled efforts of the blood, the

dilating force of the blood exceeds the elastic and contractile force of the heart,* which becomes the seat of a morbid dilatation more or less considerable. It is impossible to fix on a space of time during which the heart can thus wrestle effectually against the power which tends to develop its parietes; but it is certain that it will resist as much longer as its muscular texture is more robust. For this reason, the auricles dilate with more facility than the ventricles, and of these the left dilates much less frequently than the right; whilst, as we have seen, hypertrophy attacks it much more frequently than the other. The theory which we have exhibited requires that that dilatation or aneurism of the heart be classed among the diseases purely mechanical. It is, also, the place which ought to be assigned to them in the present day, if, as recent experiments seem to demonstrate, the heart be not susceptible of an active dilatation, its diastole being a movement perfectly analogous to that by which an ordinary muscle relaxes and returns to its habitual state, after having been contracted. If all these data be exact, the expression *active aneurism* is composed of two words, which, in some measure, contradict each other; since, of itself, aneurism does not possess any character of *activity;* a new motive for not employing this word, excepting as exactly synonymous with *dilatation.*

We have established the following principle: that, in dilatations of the heart some are *temporary*, while others are *permanent.* These last, alone, constitute

* The heart may be ruptured in the expulsive efforts to which it is exposed, in the same manner as the uterus is torn, during the too violent expulsive contractions: such, at least, is the opinion of Burns.

a truly pathological state; the others would be more appropriately designated by the term *distention*. In confounding them with each other, Pasta has committed a serious error. It is very true, that the simple distention of the cavities of the heart might pass into the state of true dilatation, and that it is not necessary, for that purpose, that there should be a prolongation or repetition of the action of the productive cause; but this reason is not sufficient for confounding together two things which present many distinctive characters.

Constant, permanent, morbid dilatation will be distinguished from that which is only temporary by this circumstance: that the first does not disappear after the evacuation of the blood that filled the cavities of the heart; this, at least, partially takes place in the other species of dilatation, which is ordinarily the effect of a prolonged agony, during which the course of the blood has been considerably embarrassed.

As to the causes immediately determining aneurism of the heart, they are essentially the same as those which produce aneurism of the aorta and hypertrophy. We shall therefore only notice the principal of them; such as contractions of the orifices of the heart, and all those diseases which impede the course of the blood, whether in the lungs, or in the system of the great circulation, &c.*

* As dilatation of the heart is produced by the presence of a too large quantity of blood in the cavities of that organ, we may conceive why the texture of a dilated heart is of a more or less deep red. This colour depends on the venous distention of the heart.

SECTION III.

OF THE SYMPTOMS AND DIAGNOSIS OF DILATATION OR ANEURISM OF THE HEART.

In the preceding chapter, we have already said that the dilatation of the heart had the effect to render the sounds which accompany its contractions more clear and resonant. We have already described the symptoms which announce dilatation with hypertrophy, and dilatation with a natural state of the parietes; nothing more remains for us but to limit those which accompany dilatation with thinness of the parietes. We shall recognise *this form of aneurism*, which we have supposed at first to affect the ventricles, by a clear loud sound, which is heard during their contractions, and which, when the thinness is considerable, resembles almost exactly that of the auricles; at the same time the impulse which accompanies these contractions is very feeble, or even entirely inappreciable. It is by means of these signs that we have been able to form a diagnosis of passive aneurism, the dilatation with wasting of the parietes of the ventricles with which the patient in our ninety-second case was affected.* Dilatation of the auricles, when consecutive to the contraction of the orifices of the heart, may be ascertained by the same symptoms as those of the latter lesion. As to the dilation produced by other causes, the cylinder has not as yet furnished any signs which would announce it

* It is necessary to repeat, that we shall be able to distinguish the dilatation of either of the ventricles by the situation in which the pulsations indicated may be heard.

in an indubitable manner. This diagnosis is, besides, of very little importance, as has been already explained.

Authors have discussed at length what are called the general symptoms of dilatation, or aneurism of the heart, and they have allowed themselves to be led into great errors, by considering the dilatation as a *primitive* disease, instead of regarding it as the consequence of some other lesion, which had been the source of the symptoms that had been attributed to the dilatation itself. We have proved, a little farther back, that this disease necessarily supposes an obstacle to the course of the blood; but this obstacle, at the same time that it gives rise to an aneurism of the heart, produces other very striking phenomena, such as distention of the vessels, serous infiltration, passive hemorrhagies, &c. These phenomena have been taken for the effect of the dilatation of the heart, whilst the latter has not, strictly, any other relation with them than being the result of the same cause; that is to say, an embarrassment of the circulation.

Before the method of auscultation was known, symptoms were sought for which would enable us to distinguish aneurism of the right cavities from that of the left. Lancisi has given, as a symptom of aneurism of the right cavities, a *fluctuation* of the jugular veins. Corvisart thinks that this diagnostic is variable, very difficult, and very uncertain: he assures us, nevertheless, that in the case of dilatation of the right cavities, the suffocation is greater, the serous diathesis is more marked, the hæmoptysis more frequent, and the livid aspect of the face deeper.

From all we have heretofore established, it is in-

dubitable that the phenomena pointed out by Lancisi and Corvisart announce, in fact, a dilatation of the right cavities, or at least a difficulty in their circulation; but it frequently happens that the real cause of the dilatation is to be found somewhere else than in the right cavities. Thus, for example, this cause frequently consists in a contraction of the aortic orifice, or of the left auriculo-ventricular orifice. Now, in these cases, the constriction is the principal and essential disease, and the aneurism of the right cavities is a secondary and in some measure a symptomatic lesion, as well as the obstruction, and the venous pulse (symptom of Lancisi,*) the infiltrations, and the passive hemorrhagies. It is of great importance that we have a perfect knowledge of all these truths, that we may not mistake, as has too frequently been done, a mere symptom, or pure accident, for the principal, or even the whole disease.

SECTION IV.

OF THE EFFECTS OF DILATATION OR ANEURISM OF THE HEART.

We have already shown above, that the dilatation of the heart is the mechanical result of a cause which

* It will, however, be proper to distinguish two phenomena which are ordinarily confounded under the name of venous pulse; namely, the movement of expansion, and distention, which we observe in the veins when the pulmonary circulation is impeded, and the kind of pulsation which we remark in the same parts, when, during the contraction of the right ventricle, a certain quantity of blood reverts towards the auricle, and the venous system. The first movement is isochronous with that of expiration. The second corresponds to the pulse and to the ventricular contractions: both of them are sometimes observed in the same subject.

determines an engorgement of the cavities of that organ; and, that it is to the action of that cause, rather than to the dilatation itself, that we must refer the various symptoms which authors have attributed to the latter. Granting the dilatation to have taken place, we must next inquire, what may be its influence on the system of circulation, and thence on the whole economy. Now, it is very evident, that, considered in the abstract, the dilatation of the heart has the effect to weaken the contractile power of the muscular substance of that organ, in consequence of the distention to which it is subjected. The muscular fibres lose in strength what they acquire in extent. If, therefore, we could have a correct idea of dilatation, wholly distinct from the cause which determines it, we should assign for the symptoms, weakness and softness of the pulse, dropsy, and passive hemorrhage; in one word, all those phenomena which we know to be the result of an obstacle to the circulation; but, as the cause of the dilatation is itself proper to produce all these phenomena, it is very difficult to distinguish from the dilatation and the cause, the proper influence of the latter in the development of similar effects. It will undoubtedly be objected to us here, that, in *active aneurism*, we observe symptoms directly opposite to those we have related; but this objection cannot be addressed to us, excepting by those who have not reflected sufficiently on the ideas which we have proposed in several parts of this work. In fact, if you notice the symptoms of active circulation, in individuals affected with *active aneurism*, certainly it is not to the dilatation that this *activity* pertains, but in reality to the hypertro-

phy with which it is complicated. In this case, the heart receiving more energy, by means of hypertrophy, than it loses by the dilatation with which it is affected, the symptoms of hypertrophy predominate over those of dilatation. The contrary takes place, when the dilatation is complicated with wasting of the parietes, and is effected at the expense of their thickness. Lastly, we may conceive a third case, in which the heart gains, by virtue of its hypertrophy, precisely as much as it loses, in consequence of its dilatation, from which results a kind of compensation, or equilibrium, which maintains its functions in their normal state; but, as this idea appears to us much more fanciful than real, we shall barely notice it.

SECTION V.

TREATMENT OF DILATATION AND ANEURISM OF THE HEART.

We have spoken, in the preceding section, of the treatment which is proper for aneurism complicated with hypertrophy; we shall only occupy ourselves here, with that which we ought to employ for simple dilatation, and dilatation with wasting or *hypertrophy* of the parietes; but, if it be true, that dilatation of the heart is uniformly consecutive, it is evident, that the treatment ought essentially to consist in combating the cause, or the disease on which it depends. If we succeed in removing the latter, the dilatation will be gradually dissipated of itself; because the cause being destroyed, the effect ought to disappear, at least when the dilatation has not advanced to such a degree, as to extinguish entirely the retractility of the muscular

fibres, and to deprive them of all their elasticity, a case which would be beyond all the resources of art; of itself, the dilatation of the heart is the source of scarcely any indication. Is it the result of a contraction of the orifices? then this latter disease should be the object of the treatment. Is the cause to be referred to an obstacle to the pulmonary circulation, such as that produced by pleurisy, or pneumonia, tubercles, or hydrothorax? pulmonary diseases evidently require all the discretion of the physician. Is it the effect of too violent exertions, or occupations which obstruct the free course of the blood, of passions too easily excited? the indication will always present itself. These various considerations are sufficient to excuse the limited extent of this paragraph.*

* In terminating the history of dilatation of the heart, we ought to speak of that which occupies only one portion of one of the cavities of that organ; we mean partial dilatation. This kind of dilatation is analagous to the lateral aneurism of the arteries. Burserius had nearly discovered it, when he proposed to make the same division of the aneurisms of the heart as of those of the arteries. An example of the partial dilatation of the heart may be found in the *Miscellanea Naturæ Curiosorum:* another has been recorded by Corvisart. This illustrious physician found in a young negro, who died in a state of suffocation—"the superior and lateral part of the left ventricle surmounted with a tumour almost as large as the heart itself. The interior of this tumour contained several layers of coagula, somewhat dense, perfectly similar to those which fill the cavities of the aneurisms of the arteries. The cavity of this tumour communicated with that of the ventricle by an opening which was rather small, and the circumference of which was smooth and polished."* We have never observed any thing similar to this interesting fact. But we have not unfrequently found, as we have already said, one of the cavities of the heart dilated in one portion of its extent, whilst it presented elsewhere its natural state, or was even contracted. It is not uncommon, for example, to find that portion of the right ventricle which is nearest the pulmonary artery considerably dilated, whilst the rest of that ventricle retains its ordinary size.

* *Essai sur les Maladies du Wein, p.* 283.

CHAPTER III.

ATROPHY OF THE HEART.

Atrophy of the heart has been observed by a great many authors; Senac has appropriated an article to it in his great work. It is to this disease that the passage from the Dictionary of Medical Sciences refers, which we have quoted verbatim in the first chapter of this section. Testa, Burns, Kreisig, and M. Laennec, have presented reflections, more or less extensive, on the same subject. Burns cites four cases of atrophy of the heart; in one of these cases the heart of an adult did not exceed in volume that of the new-born child; in another, the heart of a girl of twenty-six years of age, was as small as that of a child six years old. In the subject of our 66th case, a young man of strong constitution, and about thirty years of age, the heart did not exceed the size of that of a very young child. We have observed a pretty large number of other examples of atrophy of the heart, which would take up too much time to relate. Atrophy of the heart more generally occurs, in individuals worn out by lingering disease, inducing in its progress complete marasmus; such as, for example, we observe in those affected with phthysis, cancer, &c. We have seen a heart very little developed in an old woman; who, after having manifested evident

symptoms of hypertrophy of that organ, which was combated by bleeding, died of chronic diarrhea. It seems, in these cases, that the heart participates in the general emaciation, and that it at the same time reacts upon itself, to accommodate or *mould* itself to the small quantity of blood which circulates through its cavities; in other cases, the atrophy of the heart appears to be the result of a compression exercised upon itself, for a longer or shorter period. In the patient in our 66th case, the atrophy was evidently produced by the pressure which the heart had sustained, from a phlegmasial effusion into the pericardium; in this respect, the atrophy of the heart resembles that with which the lungs are affected, in certain cases of effusion from pleurisy. From the case of Laennec, which we have cited, the method of Valsalva and of Albertini would be sufficient to produce atrophy of the heart. In general, when the heart is atrophied, its cavities diminish in capacity: it becomes more compacted, as it were, and contracts. In consequence of this kind of *reception*, or reaction upon itself, the heart, when really atrophous, presents however sometimes a very obvious thickening of its walls, which we may very well compare to that with which many of the hollow viscera are affected; the stomach, and the bladder, for example, when they are empty, and contracted upon themselves. We shall be grossly deceived, if we confound this kind of thickening with hypertrophy, properly speaking. As we have proved, that this may exist, without any increased thickness of the parietes (hypertrophy at the surface,) so, we shall presently see, that the thickness of the

parietes may coincide with a true atrophy of that organ. When the heart is thus emaciated, and shrunk, it is, as it were, *wrinkled* and *shrivelled* on its surface, and, as Laennec observes, pretty nearly resembles a shrivelled apple.

There is another form of atrophy of the heart, which ought not to be overlooked. In this, the parietes of the heart, and especially of the ventricles, instead of being contracted upon themselves, are dilated, and at the same time thickened. This constitutes the *passive aneurism* spoken of in the preceding chapter. The ventricular parietes are sometimes so atrophous, as to resemble membrane, or in fact, the parietes of the auricles. It is true, perhaps, that this thinness sometimes depends as much on the mechanical distention of the walls, as on the atrophy, properly speaking, or diminished nutrition.

Finally, we may establish a third form of atrophy, in which the parietes are thinned, without any change in the capacity of the corresponding cavity; a variety which corresponds to *simple* hypertrophy. We shall leave the task of deciding this question to future observers.

Atrophy of the heart, with dilatation of the parietes, appeared rather singular to Senac. "What appears most surprising," says he, "is, that the parietes of the heart may become thin and wasted, when its size has become very large; this, however, has happened, as may be proved by a case reported in the Ephemerides." I have said, that this fact is singular; because, in similar cases, the parietes of the heart become ordinarily much thickened.*

* De la Struct. du Wein, tom. ii. page 394.

Atrophy of the heart being the result of other diseases, rather than constituting of itself a true disease, we have nothing to say of its treatment; it is evidently confounded with that of the disease of which it is the effect.

M. Laennec has made a comparison between the atrophy and softening of the heart which does not appear to us perfectly exact. "I have frequently thought," says he, "that softening of the heart is a disposition bordering on and precedent of atrophy, or hypertrophy. *It is, at any rate, like these two affections, the product of a certain alteration in the nutrition of that organ.*"* It is precisely, according to us, because the softening of the heart is an *alteration* of the nutrition, that it differs essentially from hypertrophy, and atrophy, which are the one only an augmentation, and the other only a diminution of the nutrition of that organ. We should not confound the *alteration* and *perversion* of the nutrition of an organ, with the augmentation and diminution of that same nutrition. They are things absolutely different.

* Auscult. tom. ii. page 295.

CHAPTER IV.

OF THE INFLAMMATORY IRRITATION OF THE MUSCULAR SUBSTANCE OF THE HEART, OR CARDITIS AND ITS CONSEQUENCES; SUCH AS ABSCESSES, ULCERS, PERFORATIONS, GANGRENE, &c.

PRELIMINARY CONSIDERATIONS.

Notwithstanding the writings and observations of Galen, of Salius Diversus, Vesalius, Rondelet, Forestus, Benivenius, de Riviere, de Kerksing, Meckel, and some others, general inflammation of the substance of the heart is one of those diseases which are involved in almost impenetrable obscurity. This is not astonishing, if it be true, as M. Laennec asserts, that perhaps there is not to be found a single incontestable and well described example of general carditis, either acute or chronic. This assertion of a celebrated observer, would undoubtedly be true, if it had been necessary, in order to admit the existence of carditis, to find pus evidently effused into the muscular texture of the heart. But, if it be sufficient to meet with the fleshy substance of that organ in a state of softening or hardening, more or less developed with augmentation or diminution of its colour, carditis would no longer be a very rare disease,

and the assertion of M. Laennec would appear at least exaggerated. Why, however, should he refuse to regard the softening and induration of the muscular substance of the heart as marks of inflammation of that viscus, since the same anatomical characters serve to demonstrate the phlegmasia of other organs? Besides, if you examine attentively what are the peculiar phenomena which characterize inflammation of the external muscles, you will see that the principal are, in fact, the softening and induration. If these muscles have been affected with acute phlegmasia, you find their tissue brown, chesnut, violet, easily torn, or even converted into a kind of sanies, or pap, deprived of all cohesion, as happens also to other organs, such as the brain, the liver, the lungs, the kidneys, the spleen, &c. Now, if you examine the muscles at a period more remote from the development of this phlegmasia, they will present a remarkable induration, sometimes cartilaginous, at other times even osseous, such as is not uncommonly met with after fractures during the formation of the callus. These comparisons elucidated, in pathological anatomy, will conduct us naturally to class among the characters, or, if you will, among the terminations of general carditis, the softening and induration of the muscular substance of the heart.

If we have regarded the examples of general carditis as very rare, it is not so with those of partial or *circumscribed* carditis, characterized by the existence of an abscess, or of an ulcer, of greater or less depth, of the parietes of the heart. If we were to believe some authors, the knowledge of the ulcers of the heart may be traced as far back as the time of the Egyptians.

However it may be, Bonet has united in his Sepulchetum, a sufficiently large number of cases of ulcers and abscesses of the heart. The ulcers of the heart have been observed on its internal and external surface. In the first case, they succeed to a phlegmasia of the internal membrane of that organ; in the second, they are consecutive to that of the external membrane, or to pericarditis. Olaus Borrichius has left us a very characteristic example of an ulcer of the external surface of the heart, as we might judge from the description which he has given of it, as follows: "Cordis exterior caro, profunde exesa, in lacinias, et villos carneos putrescentes abierat." Peyer and Graetz have observed similar cases. The ulcers of the internal surface have been noticed and described by Bonet, Morgagni, Senac, &c. Whether the ulcer proceed from without inwards, or from within outwards, its progress may be followed by a destruction of the whole thickness of the parietes affected, with a real perforation. We have already occupied ourselves with the ulcerations and perforations of the heart, in describing the inflammation of the aorta, and internal membrane of the heart. We should add here some new remarks on the perforations of the heart; a disease on which MM. Rostan and Bland have each published a memoir, which we would recommend to the reader to consult. We have said, elsewhere, (see Diseases of the Aorta,) that it appeared to us, that the perforations of the heart ought to be classed with those which have been described under the somewhat indefinite expression of *spontaneous* perforations of the stomach, intestines, ulcers, &c. Have not the perforations of the heart, preceded by

a deep ulcer, the greatest analogy with those of the stomach and intestines? Does not the antecedent inflammation in both the one and the other exercise a very important influence? On the contrary, ought not ruptures of the heart, not preceded by ulceration, rather be compared to certain ruptures of the uterus? Both one and the other take place during the contraction of the organ: both one and the other suppose a primitive alteration of this same organ: a defect of any resistance; such as that produced by softening, for example. It is precisely because the ruptures of the heart take place at the moment of the contraction, that we can explain one of the most remarkable circumstances, namely, their greater frequency in the left ventricle; that is to say, in the most robust part of the organ, and also, because it contracts with the greatest energy. The rupture ordinarily takes place towards the apex, the thinnest and least resisting position of the ventricle. When it forms in any other part of that cavity, it is undoubtedly in consequence of some particular circumstance, that cannot always be easily determined.

Enough has been already said on a disease, the diagnosis of which is very obscure, and the existence of which frequently is not manifest until it has produced sudden death.* In the mean time, let us throw aside all that has been said on this form of carditis, and turn our attention to the study of those which are characterized by the softening or inclination of the muscular texture of the heart.

* Out of ten patients who died of rupture of the heart, eight expired instantly, one in about two hours, and another in about fourteen hours. (*Revue Medicale, article par M. Bayle. No. de Juillet.*)

ARTICLE I.

OF THE SOFTENING OF THE HEART, (CARDITIS.)

SECTION I.

M. Laennec is the first author, in France at least, who has given particular attention to the softening of the heart; but he has not considered it in the same point of view that we have regarded it here. With few exceptions, in this particular, our views correspond with those of M. Laennec. We have ascertained, as well as he, that there are two species of softening, the one with a deeper colour of the substance of the heart, the other discoloured, or rather with a whitish or yellowish colour of that substance. The first kind coincides with the symptoms of acute disease, whilst the other frequently accompanies chronic diseases. Thus, we have observed the red softening, which may be called *acute*, in fevers of a grave or very dangerous tendency; whilst we have collected examples of white or yellow softening, which we have designated by the term *chronic*, in individuals who have died of slow or hectic fever. Most of the cases contained in our first chapter, and especially the fifth, sixth, seventh, eighth, ninth, eleventh, thirteenth, sixteenth, twenty-fourth, twenty-fifth, twenty-sixth, many of those contained in the first chapter of the first section of the second book, the sixty-sixth and sixty-seventh, particularly, are examples of inflammatory softening of the heart. We might here relate other examples, if space would permit. We have compared the softening and loss of

cohesion of the texture of the heart to the softening of the brain, liver, uterus, spleen and kidneys, which is generally regarded in the present day, as a sure character of inflammation of those organs. Consequently, we ought to consider the softening here as an equally positive symptom of carditis. We cannot adopt any other opinion, without disturbing the laws of analogy. M. Laennec compares the softening of the heart coinciding with *essential fevers* to the adhesive softening of the muscles observed in those diseases, and especially in *adynamic* or *putrid* fevers, but he does not give it as one of the characters of inflammation. "I would not dare affirm," says he, "that this softening takes place in all idiopathic fevers; nevertheless, I have met with it, in every instance, in those cases where I have made an attentive examination."* The remarks we have made in the first chapter of this work fully confirm those of M. Laennec. The same author adds,—"Will it be said, that the softening is the cause of the extraordinary frequency of the pulse which frequently supervenes in the convalescence of fevers, and which continues, in some cases, for many weeks, although the patient recovers his strength and flesh?" It seems to us that we might reply in the affirmative to this question: and this reply appears very natural in admitting with us that the softening of the heart is, in fact, carditis, whilst, in every other mode of observation, it would be difficult to give an account of this remarkable phenomenon; that is to say, the acceleration of the pulse, and, consequently, the contractions of the heart.

* De l'Auscult. tom. ii. page 290.

If we were called upon to demonstrate the relation which exists between aortitis and the dilatation of the aorta, it would be soon manifest that a similar relation might exist between the softening of the heart, and the aneurism of that organ, and that the first lesion is indubitably favourable to the formation of the other, because softening weakens the cohesion, and, consequently, the resistance of the muscular fibres of the heart, and this resistance is evidently a predisposition to dilatation.

SECTION II.

The anatomical characters of softening of the heart are the following: the fleshy texture of the heart is almost entirely deprived of its coherent power; it is friable and soft, and may be torn with the greatest facility, by merely pressing it slightly between the fingers. The parietes of the ventricles are flabby, and fall inward after incision, even in those cases in which they are hypertrophied, or rather thickened. In general, at the same time that the muscular substance of the heart is softened, it becomes also changed in colour; sometimes it is found of a deep red or even brownish colour, which appears to us to indicate acute carditis; at other times, on the contrary, the muscular substance is discoloured, becomes pale or yellow; a sort of colour which has been justly compared by M. Laennec to that of dead leaves: this constitutes chronic carditis.

The softening of the heart is either general or partial, and may be complicated with all the other anatomical lesions with which we have been already oc-

cupied. It appears to us, that it is never found independently of a pathological affection of the external or internal membrane of the heart.

SECTION III.

If softening of the heart be always the consequence of phlegmasia of the internal or external membrane of that organ, its causes ought to be the same as those of the latter disease. Perhaps the muscular texture of the heart may be primitively inflamed; but this is somewhat difficult to understand, and requires farther research.

SECTION IV.

The symptoms of softening of the heart have not as yet attracted the attention of physicians. These symptoms are nearly the same as those of pericarditis. When the softening is the effect of an acute phlegmasia, we may observe a great degree of anxiousness, a precipitous, small, weak, profound pulse; a tendency to lypothymia, as in cases of acute pericarditis.* Patients sometimes die suddenly. When the softening is, on the contrary, the result of chronic inflammation? the patients are in a state of cachexia and languor, the face is discoloured and wrinkled; their strength is exhausted; the pulsations of the heart and of the pulse are frequent, but soft and without

* We know that in cases of acute pericarditis, some are not accompanied with alarming symptoms, while others are marked by the most distressing phenomena. Would it be unreasonable to suppose that this difference is owing to the circumstance that in the latter the phlegmasia is propagated to the muscular texture of the heart, which would not have occurred in the first.

vigour. Serous infiltration supervenes, accompanied with other symptoms which denote obstruction to the circulation. We ought to remark, that, in every instance, the symptoms of cachexia are very frequently produced by a chronic disease of which carditis itself is only one of the alarming consequences.

If we explore attentively the contraction of the heart in those cases in which it is softened, we shall observe that they are accompanied only with a very feeble impulse, sometimes hardly appreciable, and that the sound is more dull, more obscure and more obtuse than in the natural state. The contractions, when the softening is acute, are quick, precipitous, and almost convulsive; when this softening is chronic, they lose their vivacity, and we find them sometimes precipitous, sometimes slow, as we have especially observed in one of our patients in whom these alternations were manifested in a most striking manner.

SECTION V.

Softening of the heart is, ordinarily, a consecutive, and, in some measure, a symptomatic disease: its prognosis relates to the nature and intensity of the affection by which it is produced. Thus, it would be very different, according as it should be determined by an essential fever, acute or chronic, or by a scorbutic affection. The softening which accompanies pericarditis adds much to its severity.

SECTION VI.

The softening of the heart produced by an idiopathic phlegmasia of that organ requires absolutely the same method of treatment as pericarditis;* as to that which is symptomatic, it is evident that its treatment is in some measure included in that of the principal disease, and therefore we shall speak of it here.

ARTICLE II.

OF THE HARDENING OF THE MUSCULAR SUBSTANCE OF THE HEART.

SECTION I.

Many observers have collected examples of hardening of the muscular substance of the heart. Albertini has seen a case of ossification of one of the auricles; Corvisart once found the substance of the heart so hard, that it resounded like a *horn*, although it preserved its red colour; at another time, he met with a cartilaginous hardening of the apex of the heart. Burns had an opportunity of seeing the texture of the ventricles perfectly ossified, so as to resemble the bones of the cranium. M. Renaulden communicated to Corvisart, a short time before his death, the case of a kind of *petrifaction* of the heart. We have ourselves met with various cases of induration of the heart; and have, in the preceding pages, reported the case of an individual in whom we found

* See the first chapter of the first section.

an ossification towards the apex of the heart, and that of a young man in whom a lardaceous and fibro-cartilaginous induration of the pericardium involved the proper texture of the heart: we shall now give some extracts from other analogous cases.

Case XCII.

Aneurismal Hypertrophy, with Hardening of the Right Ventricle, and fibro-cartilaginous formation of the Mitral Valve.

Louis Neuray, thirty-three years of age, died at the hospital Cochin, the 9th of January, 1823, after having presented all the symptoms of contraction of the orifices of the heart with hypertrophy of the right ventricle.* Among these symptoms, the most remarkable were the following: we heard, during the contractions of the auricles, the *bellows sound;* the right ventricle was perceived to beat with great violence; the pulsations repelled the hand, or the cylinder when applied to the region of the heart: the patient complained of strong palpitations, and she could very well distinguish that they were more developed at the right than the left side. On opening the body, we found the right ventricle of the heart a third larger than in the natural state; the dilatation was for the most part towards the insertion of the pulmonary artery; the parietes of the ventricle were from three to five lines in thickness; their texture was of a rose red colour, of remarkable consistence, and in a state of almost cartilaginous induration.

* This disease appeared to have been the result of a fall on the precordial region.

Case XCIII.

A gardener, forty-eight years of age, died at the hospital Cochin, the 21st of January, 1820, with symptoms which announced great obstruction of the circulation. The right ventricle was considerably dilated; the columnæ were enlarged, and such was their density that in pulling them strongly in opposite directions they seemed to break rather than tear. The parietes of this ventricle were thicker than natural, and presented the same hardening as the columnæ carneæ: its internal surface was very red; the ventricular septum was much thickened, and while the half of this septum, appertaining in some measure to the right ventricle was hardened, the other half, corresponding to the left ventricle, preserved its usual density.

Case XCIV.

Hardening of the left Ventricle, Softening of the right, Alteration of the Valves.

A woman about fifty years of age, was brought to the hospital Cochin, where she died in a few hours. Her pulse was scarcely perceptible, irregular, and intermittent; and when the hand was applied over the precordial region, the pulsations of the heart, in a space somewhat circumscribed, were found to be abrupt and accompanied by a purring tremor: the face was injected. The heart was of considerable size: the parietes of the right ventricle were a little thicker than in the natural state; they were soft and easily torn; the left ventricle presented such firm-

ness and resistance to the touch, that any person would have supposed that they were pressing upon bone or some similar substance: its parietes were about two fingers' breadth in thickness, and its cavity, almost obliterated, was filled with a polypous concretion, as large as a small leech.

Case XCV.

Hardening and Softening of the left Ventricle of the Heart.

A professor of belles-lettres, having what is vaguely called aneurism of the heart, died at the hospital Cochin the 13th of October, 1822. The left ventricle was dilated and thickened, the texture of its columnæ carneæ was altered, of a yellowish white colour, *hard and resisting* in some parts, soft and easily torn in others; the discolouring of the columnæ contrasted with the bright red texture of the parietes, which were likewise a little softened; the internal membrane of the heart was red.

SECTION I.

Hardening of the muscular substance of the heart presents many degrees or shades, if we may be permitted to use such an expression: hypertrophy without complication is in some measure a rudiment of induration, whilst ossification and petrifaction constitute its last degree. Between these two extremes we meet with various shades: sometimes the substance of the heart, of a rose red colour, almost healthy in appearance, approaches the hardness of fibro-carti-

lage, resists and grates on incision; sometimes it offers a density and solidity truly cartilaginous; at other times it is harder, and resounds like a *horn*, according to the expression of Corvisart. Sometimes the hardened substance is of an earthy or sandy consistence.

We have never had an opportunity of observing a general hardening of the heart, but it may be more or less extensive, and sometimes involve nearly the whole of the heart; it is frequently confined to the internal or the external surface of the heart, where it occurs in the form of incrustations:* the columnæ carneæ may be the exclusive seat of them; the same may also be said of the septum. In a case of cartilaginous hardening of the right ventricle, in our collection, only half of the septum corresponding to that ventricle was affected. Hardening may either exist with a natural state, an enlargement, or a diminution of the affected cavity. It is frequently accompanied with thickening of the parietes. It is rational to suppose that induration of the heart takes the same course as induration of the aorta and its valves, which we have already spoken of, and passes through the same changes: a minute description of all these accidental changes of texture would lead us beyond our present design.

SECTION II.

The symptoms of hardening of the heart necessarily vary according to the degree and the extent of

* In many cases the induration of the muscular substance of the heart appears to have been produced by the extension or propagation of a similar induration of the pericardium.

the evil. When the hardening is in the first degree, the substance of the heart does not present any sensible change in its external characters, and the symptoms are the same as those of hypertrophy. But it will be perceived that the activity and energy of the pulsations of the heart, must diminish in exact proportion to the progress of the disease, and that an impossibility of alternate contraction and dilatation, must be the inevitable result of an induration which should entirely change the nature of the muscular substance of the heart. It appears that the heart, with a moderate degree of induration, retains a great power of contraction. It has been ascertained, almost certainly, that an osseous or cartilaginous induration of half, or the whole of any cavity of the heart, may be recognised by auscultation, and that it must considerably increase the sound of the contractions of that organ. M. Laennec thinks, that, in cases of this nature the sound of the heart may be heard by the naked ear,* and even at a certain distance from the patient.

In the case of hardening recorded by M. Renauldin, "the hand applied on the region of the heart perceived a kind of separation of the ribs, and when this region was even moderately pressed it occasioned very acute pain, which continued a long time after the compression." In one of our patients, the heart contracted with such a powerful impulse that the chest was shaken in its whole extent.†

* The sound of the heart may be heard by the ear alone in every case where it can be heard by the cylinder.

† Our observations perfectly agree with those of M. Laennec on this point. He says, in fact, that the firmest hearts he had met with were also those which gave the strongest impulse. This is, undoubtedly, the reason why he was led to consider the first degree of induration of the heart as the

Farthermore, it is evident that the symptoms of hardening of the heart receive important modifications according to the various complications which may exist, the most of which have been noticed in the preceding chapters.

SECTION III.

The treatment of the *active* hardening of the heart must evidently be grounded on that recommended for the nutritive irritation of the heart; but, in the case of *passive* hardening, when the heart is converted into a cartilaginous or osseous substance, and is incapable of performing its functions, it is very certain that a cure cannot be expected, and that palliative measures are all the physician can rely on.

ARTICLE III.

OF GANGRENE, OR SPHACELUS OF THE HEART.

Gangrene of the heart is one of those affections the existence of which may possibly be conceived; but this disease is so rarely met with, that it has been questioned by several physicians whether it really exist: the most illustrious observers have never met with it. Considered as one of the terminations of in-

last of hypertrophy.† Corvisart thinks that this induration causes the contraction of the ventricles to be more difficult, and their movements more confined, which is true of one degree of the disease, but not of all.

† *Auscult.* tom. ii. p. 286.

flammation of the heart, it is not difficult to comprehend the reason of its infrequency. In the first place, it may be said, in general, that of all the textures of the human body the muscular is one of those the least susceptible of the development of gangrene; in the second place, sub-acute inflammation of the heart is so serious a disease, and so rapid in its course, that it kills the patients before the gangrene has had time, as it were to declare itself: this accident, then, may rather be the effect of a malignant cause, to use the expression of the ancients, than of any violence like that of carditis. Corvisart, also, does not hesitate to advance that any well authenticated instance of gangrene of the heart does not exist. Various authors, it is true, and Senac among others, who speak of *putrid* hearts, entirely decayed, &c., have not hesitated to report many examples of such a disease, but such facts are usually investigated in the most careless manner, and ought not to be received until after close examination, nor admitted but with prudent caution. These are the cases in which it is proper to confine ourselves within the bounds of philosophic doubt. If we consider with an attentive and unprejudiced mind the observations on gangrene of the heart collected by Deidier, J. Baukin, M. Geroux, we shall perhaps see that they may be more naturally arranged among the examples of acute softening of the heart, than among affections truly gangrenous. Our twenty-sixth case itself, in which the heart was soft, flabby, of a brownish colour, and almost *putrid*, does not appear to us conclusive, and gave rise to the same doubt as the preceding; because this kind of softening of the heart may have been nothing more than a

softening, which the commencing putrefaction of the subject had transformed into a gangrenous state. It is much better to resolve to support the doubtful side of a question than to expose oneself to the hazard of mistaking a cadaveric phenomenon for an organic and pathologic lesion. Gangrene of the heart, if it be true that it really exist, is too far beyond, all the resources of art, that we should propose any advice respecting its treatment here.

CHAPTER V.

OF CANCER, AND THE OTHER ACCIDENTAL PRODUCTIONS OF THE HEART, WHICH HAVE NOTHING ANALOGOUS IN ANY OF THE OTHER TEXTURES OF THE ANIMAL ECONOMY.

In placing the history of cancer of the heart after inflammatory softening and gangrene of that organ, we do not wish it to be understood that we establish, as some authors have done, a kind of resemblance between gangrene and cancer, nor that we think, with others, that cancer is nothing more than a phlegmasia: such is not our opinion. In inflammation, there is an exaltation of the organic properties; in gangrene, there is an abolition of these same properties; but cancer does not consist of either one or the other of these states: it is, in fact, a *perversion* of the organic properties, from which results the production of a morbid accidental tissue which has nothing analogous in the animal economy, and could not have, if it be true that its formation is not governed by the same laws as those which take precedence in organogeny, properly speaking. Farthermore, cancer of the heart is a disease so rare, that the most distinguished pathologists have never witnessed examples of it. However, MM. Recamier, Bulhier, Cruveilhier, and some others, have stated the existence of this cancer, of which M. Carcessone had already

given a description in the *Memoires de la Societe Royale de Medicine*, for the years 1777 and 1778. Finally, three new cases of this disease, collected by MM. Andral and Bayle, have been very lately published in the *Revue Medicale*. In the first patient, the cancer occupied the ventricle and auricle of the right side, and was complicated with hypertrophy of the left ventricle. The symptoms observed, says M. Andral, were those which usually accompany *aneurism of the heart*. According to the same author, the individual died in consequence of *hypertrophy*, and not of cancer of the heart. M. Andral thinks, also, that if the cancer had not been complicated with *hypertrophy of the left cavities*, it would not have disturbed the circulation in a special manner. What a singular opinion! He is not willing that the cancer, that is to say, the disorganization of the heart, should be an obstacle to the circulation, and yet he regards as such the *hypertrophy*, that is to say, the augmented energy of the heart! We have proved, elsewhere, how erroneous such an opinion must be; and M. Andral would not have embraced it, if he had not taken it, as it were, on trust, without submitting it to his judicious and profound mind. It is farther evident, that the patient in question died, for the most part, in consequence of an ossification of the aortic valves, an alteration of which the aneurism and hypertrophy of the heart were only the effects, and which was the true cause of the embarrassment of the circulation. In the second case reported by M. Andral, the cancer was again situated in the right side of the heart. Lancinating pains at intervals, dyspnœa, progressive wasting of the body, and at last anasarca, were the

principal symptoms observed. In the third case, which appertained to M. Bayle, the cancer affected the two auricles and the interventricular septum; no local symptom was observed, and nutrition itself continued unimpaired. The patient, however, died.

From the preceding facts, which M. Andral has kindly communicated to us, he concludes, "that it is evident that the muscular fibres of the heart may be in part destroyed *without any remarkable disturbance of the circulation;* that in no case was death the result of an influence exercised by the heart on the circulation; that, in the first case, death was owing to an aneurism of the heart." (*M. Andral, in the first instance, considered hypertrophy as the cause of it: it is clear, however, that he confounds hypertrophy and aneurism with each other, although very different affections, as we have elsewhere explained.*) "That, in the second case, it was in consequence of a change of nutrition that the cancer induced the death of the patient." M. Andral does not say how death happened in the third case; and we must acknowledge that it would be difficult to state it, after an attentive reading of the case.* M. Andral terminates, likewise, by allowing that the facts which he has reported are not sufficiently numerous to enable him to trace the general history of cancerous affections of the heart: we cannot terminate our own remarks by a more wise and judicious reflection.

Cancer is not the only accidental production to be met with in the heart; there has also been found tu-

* We would request the reader to examine the opinions of MM. Andral and Bayle, inserted in the Revue Medicale, (cahier de mai.)

bercular matter, serous cysts, and vesicular worms. Some of the ancient observers pretend that they have even met with worms; but this remark originating in times when the love of the marvellous frequently distorted the truth, must be placed by the side of those which speak of hairy hearts, hearts filled with lice, serpents, vipers, &c., and by the side of so many others, whose authors, as it were, cause nature to lie, instead of being the sincere interpreters of it.

We have referred the cartilaginous, osseous, and other analogous productions which may be found in other parts of the system, to the consequences and terminations of inflammation; we shall not, therefore, reconsider them here.

SECTION III.

DISEASES OF THE VESSELS OF THE HEART.

The vessels of the heart are subject to all the diseases of the vascular system in general. We shall proceed to give a rapid sketch of all that medical inquiry has collected on this part of the pathology of the heart.

SECTION I.

DISEASES OF THE ARTERIES OF THE HEART.

The coronary arteries are susceptible of inflammation, like all the rest: we have sometimes found their internal membrane red; and, in their parietes, the same alterations which we have described when speaking of aortitis, that is to say, calcarious scales, and cartilaginous laminæ, &c. In a case reported in another part of this work,* the coronary arteries were ossified in their whole extent, and somewhat resembled branches of *coral.* We are in possession of a case of obliteration of one of these arteries in consequence of a complete ossification of its parietes.

We have also met with general dilatation of these arteries. In one case of hypertrophy of the left ven-

* Case LXXVIII. page 298.

tricle, we found the left coronary artery so much enlarged, that its caliber was double that of the right coronary.* We have not had occasion to observe ulceration, rupture, or *false aneurism* of these arteries.

Many physicians, especially in England, have regarded ossification of the coronary arteries as the cause of *angina pectoris*, or *stenocardia;* but taking as our guide exact and rigorous observation, it is impossible to refer the symptoms which characterize *angina pectoris* to any lesion of the heart exclusively. We have seen these symptoms accompanied with a multitude of different *organic affections*, either of the heart, or of the large vessels, or even of the lungs. Hence the reason why Heberden, Wichmann, Parry, Burns, Testa, Kreisig, Brera, Averandi, Jurine, Desportes, &c., who have paid particular attention to the study of this disease, do not in the least agree respecting its seat and nature.† Some will have it that angina of the chest depends on an ossification of the coronary arteries; others consider it as a symptom of compression of the heart by the neighbouring organs, and even by the abdominal viscera: some of them refer it to a neurosis of the pulmonary nerves, others to a neurosis of the cardiac plexus, &c. Perhaps each of these authors are right and wrong at the same time: right, because stenocardia may be really produced by the organic cause assigned to it; wrong, because this cause, though real,

* Case LXXIV.

† Every one knows that the principal symptoms of angina pectoris are a sense of constriction of the chest, pain in the region of the heart, and in the left arm, anxiety, suffocation, and extreme pain, occurring most commonly in paroxysms.

is not the only one which may give rise to the disease in question. But, without engaging in a difficult discussion, we shall content ourselves with observing here that ossification of the coronary arteries cannot be considered as the constant cause of angina pectoris, since we have proved its existence in subjects who had not presented any symptoms of stenocardia, and because other physicians have made the converse remark, that they have met with angina pectoris without any ossification of the coronary arteries.

In the actual state of science, we cannot say precisely what are the effects of ossification of the coronary arteries; but we think we can hazard the opinion, that in certain cases its effects are totally inappreciable.

SECTION II.

DISEASES OF THE VEINS OF THE HEART.

We may say of the veins what we have said of the coronary arteries, namely, that their diseases must necessarily be the same as those of the venous system in general. The diseases of the veins of the heart are either very unfrequent, or have been badly observed, for few examples are found among authors: the only one which we ourselves have frequently observed, is a kind of varicose dilatation of these vessels. This dilatation is observed in cases where the circulation has been a long time, and considerably obstructed, and coincides with dilatation or aneurism of the heart. We can readily comprehend the mechanism of this affection of the cardiac veins. The

blood distending the cavities of the heart, and especially of the right auricle, does not permit the blood contained in the veins of the heart to discharge itself freely into that auricle: it accumulates, therefore, in their cavity, and swells them to the utmost extent. From this results venous turgescence, and, if we may be allowed the expression, a *sub-apoplectic* state of the heart's texture. We have seen the veins ruptured, in consequence of the excessive congestion and extreme distention of the parietes. Besides, this lesion of the cardiac veins is not so much a special disease as the symptom of a more severe affection: it will be sufficient that we have alluded to the disease, and shown its anatomical characters, the symptoms and treatment of which are confounded with the symptoms and treatment of obstructed circulation, from whatever cause produced.

SECTION III.

The diseases of the lymphatic vessels of the heart are entirely unknown.

SECTION IV.

OF THE DISEASES OF THE NERVES OF THE HEART, SUCH AS PALPITATIONS, CARDIALGIA, SYNCOPE, OR PARALYSIS OF THE HEART.

The nerves of the heart, which should be regarded as the spring and principal agent in the living movements of that organ, cannot long remain unaffected with the various diseases by which it may be attacked; but it is of less consequence to examine in

this place what part the nervous system of the heart performs in these diseases, than to bring into view the diseases which primarily affect the nervous plexuses of the heart, and the influence of which must necessarily be imparted to its contractile tissue; for the researches of physiologists have informed us, that this organ acquires the principle of motion from the nervous ganglionic system. Now, the nerves of the heart, like those of all the other organs, are susceptible of two modes of vital lesion; namely, an increased or diminished sensibility, or rather irritability, with which they are endowed, from whence we may trace the *active* nervous affections arising from an excess of stimulus; or *passive* nervous affections from the want of this irritability.

I. NERVOUS AFFECTIONS OF THE HEART.

To this class of nervous affections we may refer palpitations, spasm, convulsions of the heart, and neuralgia of that organ.

SECTION I.

OF PALPITATIONS, OR IRRITATION OF THE NERVES OF THE HEART.

Every palpitation supposes some irritation of the nerves of the heart, since the first are the principal movers of the second; but nervous palpitations, properly speaking, are distinguished from others in this, that they depend on a direct excitation of the nerves, and cannot be attributed to any appreciable lesion of the

heart; whilst the others, that is to say, the secondary or sympathetic palpitations, coincide essentially with a material and sensible alteration of that organ.

Nervous palpitations, like all other palpitations of the heart, consist of an augmented intensity or frequency, or simultaneous intensity and frequency of the natural contractions of that organ; of such a kind, that its contractions, which are made without our knowledge in the state of health, become not only very sensible, but also very importunate to the patient. There is another kind of palpitation, which does not enter into the preceding definition, which is characterized by a precipitation of the pulsations of the heart without any increase or diminution of their energy. The degrees of intensity of the palpitations are almost infinite, from those which are scarcely to be perceived, to that spasmodic convulsive contraction during which the heart may be broken, as the voluntary muscles sometimes are when they contract with excessive violence.

The symptoms of nervous palpitations, are, to a certain degree, vegetative; that is to say, they are to be distinguished by the quick, strong, tumultuous contractions, not accompanied by any of those phenomena which announce a material or organic disease of the heart. The patient can hear very distinctly the alternate sound of the movements of the heart: when he lies on the side, they are often very inconvenient. He can perceive also in the palpitations those abrupt and violent shocks complained of in the precordial region. The physician, farthermore, in forming a diagnosis of palpitations, can make use of three of the senses, touch, hearing, and sight;

and, according to the definition given of this disease, the symptoms furnished by these different modes of exploration might be anticipated. We shall, therefore, pass immediately to the causes of palpitations.

The causes of this affection are very numerous. The predisposing are a nervous, sanguine, or plethoric temperament. The active causes are, passions of the soul, such as anger, joy, love, surprise; violent exercises, running, dancing, and venereal excesses, stimulating ingesta, such as spirituous liquors, tea, coffee, &c., are also agents which must be ranked among the causes of palpitations. Finally, all of these causes respectively determine palpitations, first, by irritating directly the nervous plexuses of the heart, as happens in the active affections of the soul; or, secondly, by stimulating them indirectly, as occurs in violent exertions, and from using exciting aliments; the first accumulate in the heart a too large quantity of blood, its natural stimulant,* the second augment the exciting properties of that fluid. Agreeably to these opinions, palpitations may be divided into nervous and sanguineous; the former class originating in the immediate irritation of the nervous system, the latter in the quantity or the quality of the blood flowing into the cavities of the heart. There are also *mixed* palpitations, which depend at the same time on a primitive excitement of the cardiac nerves, and an *indirect* excitement of them by plethora, or by the irritating properties of the blood passing through

* To the palpitations of the heart produced by plethora we can oppose those produced by profuse hemorrhage: because that organ palpitates alike, whether a part of its natural stimulus be removed, or too large a quantity be received.

it. The palpitations which accompany the material diseases of the heart, the *organic* palpitations, if it be permitted us to use such an expression, are manifested under the influence of one of the conditions pointed out; namely, congestion of blood in the cavities of the heart. When we regard the intimate nature of the phenomena, and consider that the distinctions established between them, are founded on the diversity of their causes only, or rather on the different modes by which these causes arrive at the cardiac plexuses, to establish an increase of stimulus, we are authorized to say, that there is really only one kind of palpitation. This excess of stimulation is the fundamental fact; the palpitations are the result of it, or, if you will, the symptoms.

In fevers, whether primitive or consecutive of authors, in the febrile phlegmasiæ, the heart, if more or less irritated, precipitates its pulsations, and really palpitates. This kind of palpitation might be distinguished by the term febrile.

Palpitations are continuous or intermittent in their progress, accordingly as their causes assume either the one or the other of these types. Purely nervous palpitations, developed by the influence of some moral affection, or succeeding too violent exercise, are dissipated in a few moments after the cause which produced them has ceased to act; they constitute not so much a disease, as an indisposition, or inconvenience. Intermittent palpitation is one of the phenomena attending several nervous diseases which have been distinguished by particular names; such as hysteria, hypochondriasis, and melancholy. Continuous palpitations deserve the most attention; they are very

seldom purely nervous: they are most frequently associated with some lesion of the heart; which, though without difficulty at the commencement, soon becomes of a serious nature, when neglected. Farthermore, what is called nervous palpitation, is itself the result of some organic lesion: this lesion, it is true, is hidden from observation, because our senses, perhaps, are not sufficiently acute to perceive it; but, it no less certainly exists, for it would be absurd to suppose any disease whatever to exist, without a lesion of the organs.

The treatment of palpitations may be rationally deduced, from the distinctions and relations which have just been established; therefore, it is evident, that the first indication is to ascertain and remove the cause of the malady, or combat the disease, of which the palpitation is only a symptom. If the palpitations be owing to a plethoric condition, blood-letting, and other antiphlogistic remedies must be employed; or, if the causes can be attributed to immoderate or violent exercise, or passions of the soul, we must strictly prohibit the one, and use every exertion to moderate the others. At this point begins the domain of psycological medicine; here the physician should follow the footsteps of Erasistratus, Boerhaave, Bouvart, and many other celebrated practitioners. The most rational physical remedies, all the treasures of therapeutics will be lavished in vain, as long as the physician is unable to trace back the true source of the disease; and, as long as he has not treated by moral medicine, a disease whose origin is entirely of a moral nature, of what consequence is it, in fact, that you combat a symptom unceasingly, if you do not attack the

cause which has produced it? Palpitations produced by the passions, moral palpitations, properly speaking, above all then, demand the medicine of the soul. Passion should be opposed to passion, when it is impossible to procure for the patient the object of his desires, and the possession of which would be sufficient to relieve him at once, it is necessary to offer him all the means capable of diverting the passion which distresses him. The physician, at the same time, should not neglect any of the resources which the materia medica, or pharmacy may furnish him; he should combine the use of physical with *moral antispasmodics:* opium, digitalis especially, which appears to have a *specific* tranquilizing effect upon the heart, music, castor, infusions of tilia and orange flowers, juleps, and their distilled waters, warm baths, and cold baths, if the patients can support them, &c. are so many therapeutic agents, to which we may resort with success.

SECTION II.

NEURALGIA OF THE NERVES OF THE HEART.

We shall only allude to this disease, for we have never had occasion to observe it. It is little known, like all the neuralgias of the ganglionic nerves; a system from which the heart receives the greatest number of its nervous filaments. Perhaps this neuralgia is of itself one of the causes which produce the disease, to which has been given the name of *angina pectoris*, or *stenocardia*.

II. PASSIVE NEUROSIS OF THE HEART.—SYNCOPE.

A. We have seen the heart submitted to various modifying irritants, precipitate its pulsations, palpitate, struggle, as it were, to repel them: but, in the present instance, on the contrary, we have seen it lose its energy, relax its contraction, and fall into a state of stupor, the highest degree of which constitutes syncope, or *paralysis* of the heart. Many physical or moral agents are endowed with the property of weakening, or even completely extinguishing the contractability of the heart; such are what are called the depressing passions, narcotic poisons, as digitalis, hydrocyanic acid, and certain miasms, which prostrate, as it were, all the nervous powers: such as the plague, and certain malignant intermittent fevers, &c.

B. The phenomena of syncope are those of sudden death, from which it differs only in this, that in the greater number of these cases, the patients may be restored to life: we say, in the greater number of cases, for there are some in which the syncope is followed by actual death. The individual suffering from syncope, first begins to feel an inexpressible uneasiness; his eyes become obscure, and covered with a mist, tinnitus aurium occurs; the face becomes pale; the lips are discoloured; the mind is extinguished; sensation is obliterated; the whole body is chilled; and covered with sweat; the limbs fall like inert masses; the knees *sink* under the weight of the body; all the joints become bent; the pulse and respiration disappear; no external signs of life

remain; it seems, as it were, momentarily *eclipsed.* Nevertheless, the patient *returns to himself,* and awakes from the *fainting death;* sensation and motion return, and he feels as if he were restored to life. Most generally, the syncope lasts but a few seconds, at other times it continues for several minutes. In certain circumstances, happily very rare, it is prolonged for several hours, or even whole days; and we have seen this apparent death simulate so perfectly the real death, that persons who have been found in this dangerous state of syncope, perfidious sleep, and too faithful image of death, have been buried. The sense of uneasiness and anxiety which we have given as one of the precursory signs of syncope, is not always present: moreover, some persons, before they become ill, experience the most delightful sensations of tranquillity and voluptuousness. Montaigne, recovering from syncope, regretted bitterly that he could no longer enjoy the luxurious existence which had procured him a temporary annihilation.

C. The *causes* of syncope are exceedingly various, and are frequently of an opposite character. In like manner, according to the vulgar expression, some persons are overpowered with joy, pain, love or hatred. Violent physical pain, for example, that which accompanies peritonitis, the passions, the sensations produced by the sight of certain objects, or certain sounds, or certain odours, &c. may produce syncope.* A more direct cause of this disease consists

* It is said, that the Roman ladies were affected with syncope whenever they breathed the odour of flowers, and were therefore not permitted to keep them in their apartments. Every day we hear among us of women being taken sick at the sight of a spider, or a bat; and of some, whose nerves are so susceptible that they are liable to the same accident at the touch of a peach, or

in the abstraction of a more or less considerable quantity of blood; thence the syncopes produced by hemorrhage, and even a simple bleeding. Great obstructions of the circulation also suspend the action of the heart, and occasion fainting. Finally, every thing which can directly or indirectly extinguish momentarily the nervous power of the heart, is a cause of syncope.

D. The syncope produced by diseases, whether of the heart, or of the other organs, is a symptom, rather than a disease, and requires, besides the specific treatment of syncope, that which is appropriate to those diseases of which it is one of the most dreadful effects. Syncope of a purely nervous character, such as that which happens to hysteric women, convalescents, &c. is not in the least dangerous. The least excitement, the impression of fresh air, effusions of cold water, the application of certain fragrant odours to the pituitary membrane, such as those by ether, eau de Cologne, ammonia, &c. and a thousand other simple and popular measures, are sufficient to overcome it.

a raspberry, or velvet, satin, &c. What is still more remarkable, some women fall into a fainting fit without any obvious cause, and, as it were, at will. Undoubtedly, syncope produces the same voluptuous effect in them which it did in Montaigne.

SECTION V.

OF THE DISEASES OF THE CELLULAR TEXTURE OF THE HEART.

SECTION I.

The cellular fatty texture, which naturally envelopes the heart, may sometimes undergo a kind of hypertrophy, so as to form enormous masses, from the pressure of which that organ is, as it were, choked up. This kind of *obesity* of the heart has been observed by several pathologists, who have thought themselves authorized to regard it as the cause of serious disorders, and, in some instances, of sudden death. Corvisart does not deny the possibility of such effects; but, assures us, that in subjects where he had met with very fat hearts, he has observed nothing which would prove this state to be pathologic; that is to say, capable of deranging the function of the organ to such a degree, as to produce disease. Our own observation corresponds with that of Corvisart; it appears, that this accumulation of fat about the heart, is only a circumstance, favourable to the rupture of its muscular texture; which depends, no doubt, upon the interposition of fat between the fleshy fibres, separating and disuniting them, and

by pressure, occasioning an *atrophy* of the whole organ. It is very remarkable, indeed, that, in general, the parietes of hearts which are fat are very thin, and lose the firmness of their fleshy substance. We have related a case of rupture of the auricle, which occurred in a priest, whose heart was overloaded with fat.

Obesity of the heart, is a state which does not appear to be met with, excepting in persons endowed with considerable general fleshiness; we have, nevertheless, seen hearts much more fat than natural, in individuals of a very moderate degree of flesh. This condition spoken of, should not be confounded with what has been distinguished by the name of fatty degeneration of the heart.

SECTION II.

In this last named affection, the muscular texture of the heart is converted, according to M. Laennec, "into a substance which presents most of the physical and chemical properties of fat: it is an alteration perfectly resembling that which Haller and Vicq-de'Azir have observed in the muscles."* Laennec has never seen this alteration, except at the apex of the heart: he has seen it resemble certain softenings of the heart; but, he thinks that we may distinguish them in this, that the part affected with fatty degeneration, when pressed between two folds of paper, soils them deep-

* According to the researches of M. Beclard, the muscles are not susceptible of the fatty degeneration. They are simply atrophied and discoloured in that change, which has been called *the fatty degeneration of the muscles.*

ly.* We think we have observed the fatty degeneration of the heart, to which M. Laennec alludes; but, we acknowledge that we have confounded it with the chronic softening, of which, perhaps, it is only a variety.

SECTION III.

We sometimes observe a state opposite to that which we have described under the denomination obesity or fatty hypertrophy of the heart; that is to say an *atrophy*, more or less marked of the cellular membrane of the organ. This emaciation of the heart coincides with the general emaciation, which follows diseases of debility and consumption, such as phthysis pulmonalis, chronic diarrhœa, &c.

SECTION IV.

Lastly, we have not unfrequently found the fatty cellular texture of the heart in a state of serous infiltration. This disease, to which we have given the name *œdema* of the heart is seldom simple and essential; it most frequently accompanies general dropsy, and may be attributed to the same general causes. We do not think that it has any peculiar signs: we can only suspect its existence in individuals affected with the serous diathesis, and who, notwithstanding, retain a good degree of flesh. This œdema has appeared to us to be always passive; that is to say consecutive to some obstruction of the venous circulation.

We do not doubt but that the cellular texture of the heart may become inflamed like all the other tex-

* De l'Auscult. Med. tom. ii. p. 298, 299.

tures; but we have never had occasion to observe this kind of phlegmasia, which does not appear to have been attended to by any with whom we are acquainted: it can hardly be said to exist independently, and must, necessarily, be confounded with pericarditis or carditis.

SECTION VI.

OF THE DEFECTIVE CONFORMATION AND POSITION OF THE HEART.

ARTICLE I.

OF THE DEFECTIVE CONFORMATION OF THE HEART GENERALLY, AND OF THE COMMUNICATION OF THE RIGHT AND LEFT CAVITIES PARTICULARLY.

The English, and especially the Germans, have devoted more particular attention than we have done to the various defective formations of the heart and large vessels. Burns arranges these *monstrosities* into six species; viz.

The *First*, in which the aorta arises from both the ventricles at the same time. It has been observed by Nevins in England, Sandifort, Stander and Tiedemann in Germany.

The *Second*, in which species the foramen ovale and the canalis arteriosus remain open. It has been observed by a great many authors, and, among others, by M. Deschamps, MM. Fouquier and Thibert in France; and Messrs. Burns and Monro in England.

The *Third*, where the canalis arteriosus is obliterated, the foramen ovale remaining pervious. This variety has been observed by Morgagni, Hunter, Corvisart, MM. Caillot, Jurine, Louis, &c., and three times by ourselves.

The *Fourth*, consisting of a complete obliteration of the pulmonary artery, at its origin, which cannot receive blood, excepting by a retrograde action of the canalis arteriosus. It has been mentioned by Hunter; but his description is not perfectly satisfactory.

The *Fifth*, in which the heart has only two cavities, an auricle and a ventricle; and from the latter originates a vessel which divides into two branches; one of which conveys the blood to the lungs, and the other to the whole body.

The *Sixth*, where the mitral valve represents a sort of *plane* perforated in the middle. It has been observed by Mr. Burns. We think that similar dispositions may be sometimes found in the other valves of the heart: we have met with them in the tricuspid valve, and in the valves of the pulmonary artery, as well as Morgagni and M. Louis.

These several species, admitted by Burns, are far from including all the cases of vicious conformation of the heart and large vessels. We have seen, for instance, the aorta arise from the right ventricle, and the pulmonary artery from the left; we have seen, also, and M. Breschet has also shown us an example, of hearts with only one ventricle and two auricles.*

* This defective formation has been noticed in the work of Kreisig, *Sur les Maladies du Cœur.*

Thus, Joseph Exupere Bertin relates, in his manuscripts on angiology, that he found a double curvature of the aorta in a child from ten to twelve years of age. "The aorta," says he, "originated singly from the left ventricle, and afterwards divided into two branches, which again united to form the aorta descendens, nearly in the same manner as the two branches of a river unite with each other after having formed an island." Here then are three new species of *monstrosities* in addition to those mentioned by Burns.

We may farther conceive that these species, by combining with each other, may form a great many others, which might be called mixed or compound. Whether this be true or not, of all the vices of conformation the most frequent is that in which there is a communication between the different cavities of the heart; we shall, therefore, give a few moments' attention to the subject.

The communication between the right and left cavities of the heart most frequently takes place, in consequence of a permanent opening of the foramen ovale; this communication, however, is sometimes established in consequence of a congenital or accidental perforation of the septum of the auricles or the ventricles. We have even seen cases in which the four cavities of the heart communicated with each other, reciprocally, by means of a perforation existing at the junction of the auricular with the ventricular septum. Dr. Thibert has published an example in the *Bulletin de la Faculte de Medecine* (an. 1819.)

Whatever be the mode of communication established between the right and left auricles; between

the pulmonary and aortic ventricles, or between all these cavities; whether the communication be congenital or accidental, one of the immediate effects of such an arrangement is the mixture of the arterial and venous blood. It may be difficult to conceive why this mixture does not take place in those cases where the communicating cavities exercise an equal force, and where the columns of blood, in attempting to traverse the opening of communication at the same time, oppose each other with equal force, and produce, as it were, an equilibrium; only, in these cases, which probably are very rare, the mixture would be much less marked than in those where cavities have unequal forces. But the circumstance most proper to effect this mixture, as M. Louis has remarked,* may be found in the obstruction experienced by one of the columns of blood in passing through the channel, naturally fitted for it, as happens when the orifices are more or less considerably contracted: a very common disposition, which may, perhaps, play an important part among the causes proper to determine the vicious conformation of which we are speaking. When the circumstance of which we have spoken exists, it is evident that the column of blood, the natural passage of which is found, as it were, intercepted, will increase the unnatural opening offered to it, and will pass through it with more or less facility in proportion as the cavity which contracts upon it, is endowed with an absolute or proportionate energy. The mixture of the red and black blood, the *left* and the *right* blood, is effected

* See his memoir on this subject in the *Archives Gener. de Medecine, t. iii. num. de Novem. et Decem.*

then during the systole of the heart. According to M. Louis, the same mixture takes place in all cases, during the diastole of that organ. But why does not the perfect equilibrium which M. Louis admits to exist during the systole, when the opposite cavities have equal forces, exist during the diastole? We propose this question to M. Louis; because to us this equilibrium, whether during the contraction, or during the dilatation of the heart, seems to us much more fanciful than real, and, in our opinion, can only be considered as a more or less probable hypothesis.

However this may be, it is not absolutely necessary that the effects of the mixture of the two kinds of blood should be absolutely the same in the right and the left cavities. Observation seems to have confirmed what reason approves in this particular, since the reciprocal communication of the cavities of the heart is almost constantly accompanied with dilatation or hypertrophy of the right cavities, whilst these diseases are scarcely ever met with excepting in the left cavities. Hypertrophy of the right cavities, under the circumstances in question, is a phenomenon of which we have attempted to give an account when inquiring into the particular causes of hypertrophy of that side of the heart. We have said that the introduction of a certain quantity of red arterialized blood, in the right side of the heart, is well calculated to determine hypertrophy, because it is more irritating, more vivifying, more nutrient than the dark coloured blood which flows in the normal state only through the right cavities. If this explanation be not true, how does it happen that hypertrophy of these cavities is the constant accompaniment of their com-

munication with the left? The dilatation which we meet with, is undoubtedly the mechanical result of the passage of too large a quantity of blood into the dilated cavity, and perhaps, also, a too vivid impulse with which the blood is propelled from one of the communicating cavities to the other. Contraction, on the contrary, supposes that the cavity receives only a very small quantity of blood, or that this same cavity has lost its capacity, in consequence of the progress of the hypertrophy from without inward, and consequently at the expense of this capacity. It is also necessary to take into account, in explaining hypertrophy and dilatation of the right cavities of the heart, the state of the corresponding orifices: now, it is very remarkable that of more than half the cases of communication between the left and right cavities of the heart, we find a contraction either of the ventriculo-pulmonary orifice, or the pulmonary artery itself.

The symptoms which would lead us to recognise a communication of the opposite cavities of the heart deserve a careful consideration and inquiry: many physicians have attributed to this malformation, exclusively, a disease which they have denominated *blue jaundice, blue disease, cyanosis.* Such an opinion is entirely inadmissible, since we have in our possession cases in which *cyanosis* did not exist, although the *right* heart communicated with the *left,* and others where the *cyanosis* existed, although no communication was established between its parts; the least reflection, one would suppose, would be enough to make any one reject the opinion we have refuted. In fact, if the *blue* colour of the skin be produced by

the malformation in question, the same colour should be met with in every other part, which is contrary to observation: farthermore, according to an ingenious remark of M. Professor Fouquier, the skin of the fœtus, which circulates only *black* blood, is not *blue*.

It is very true, notwithstanding, that in certain individuals, affected with a communication between the two hearts, we observe a bluish colour in certain parts, such as the lips, the ears, the face in general, &c. But this phenomenon admits of the same explanation as that we have exhibited when speaking of the obstructions of the circulation; that is to say, it depends on the stasis of the blood in the right cavities, and in the venous system, which is in like manner distended. This explanation is so much the more rational, inasmuch as this malformation of the heart is most frequently accompanied with a contraction of the orifices, or, of the pulmonary artery itself. The other phenomena of the symptoms of a communication between the right and left cavities of the heart, given by authors, are, more or less syncope, diminished vital heat, sensibility to cold, suffocation more apparent than in the other diseases of the heart, a periodical suffocation, accompanied or followed by lipothymia, and provoked by very slight causes. We think that most of these symptoms are frequently, less the effect of an unnatural communication between the opposite cavities of the heart, than that of the concomitant diseases, or contractions of the orifices. What leads us to think so, is that we have seen a case of the persistance of the foramen ovale, in which no symptom, which could properly indicate this lesion, appeared.

Finally, to enable us to pronounce with assurance on the value of the symptoms proposed, it is necessary that we should have observed the defective conformation which occupies us in its state of simplicity, and this, it seems, has not hitherto been done.

If this monstrosity constantly opposed so great an obstruction to the circulation, we should with difficulty conceive how individuals who had been affected with it could live until twenty, forty, fifty, and even sixty years, without taking into the account the length of time their lives might have been prolonged if they had not fallen victims to other diseases. The palpitations, the intermittance and irregularity of the pulse, the bellows sound, and the purring tremor in the precordial region, supposing them really produced by a communication between the right and left cavities of the heart, should not be considered as pathognomonic symptoms, for these symptoms are likewise met with in the contraction of the orifices. Besides, it is of no great consequence to know, precisely, to what kind of disease of the heart the symptoms noticed appertain; it is sufficient that they indubitably announce an obstruction to the circulation.

M. Louis, in the memoir which he has published, thinks that the communication between the right and left cavities is always congenital. Perhaps this assertion is too general. In fact, we may readily conceive that an ulcer, which should occupy the auricular or ventricular septum, might be converted into a perforation, in consequence of which the red and the black blood would mix in a variable proportion; we think, indeed, that such a case is presented in some of the patients whose history M. Louis has related.

Finally, although the perforation of the foramen ovale is most frequently, without doubt, congenital, we think also that it may sometimes be accidental, and that violent exertions may burst the foramen, by detaching the valvular laminæ which close it, as sometimes happens in a rupture of one of the columnæ, or even the parietes of the heart: this is likewise the opinion of M. Laennec.

Buffon, Bichat, and several others since, have imagined that certain amphibious animals possessed the faculty of remaining a long time under water, only because they had been affected with the malconformations of which we have been speaking. Corvisart has, with reason, it appears to us, regarded this opinion as fabulous, if not entirely erroneous. In contradistinction to the perforated state of the foramen ovale after birth, we ought to say a word respecting its closure in the fœtus: a defect of conformation which must be more fatal to the fœtus than the preceding is to the child which has seen the light, or even to the adult. Vieussens, in his *Treatise on the Structure of the Heart,* (Chap. viii. p. 35,) relates the history of a child in whom this defective formation was observed; a fact which appears to assimilate the circulation of the fœtus with that of the adult, whilst that of which we have just before spoken approximates the circulation of the adult to that of the fœtus.

This will also be a proper place to speak of those *transpositions* of the cavities of the heart, which have been imagined by authors to explain in what manner hypertrophy, or, to make use of their expression, *active aneurism* of the right ventricle is deve-

loped. But we would again observe, that such vices of conformation are facts at least very doubtful; since the physicians who admit them in order to make nature subservient to their method of explanation, cannot adduce any example of it in their own experience. Besides, we have attempted to explain the mechanism, or rather the formation of hypertrophy of the right ventricle, without resorting to the intervention of such an hypothesis.

ARTICLE II.

OF THE DISPLACEMENTS OF THE HEART.

The heart is susceptible of various changes of position, which may produce a more or less sensible obstruction of the freedom and regularity of its functions, although, in many cases, the displacement is not followed by any disturbing accident. The displacement of the heart may be either congenital or accidental; that is to say, the result of a disease, developed after birth. Cases of the first kind have been related by authors. Buttner, Wilson, Shultz,* and Martinez,† have found the heart situated outside the cavity of the chest, or even in the right side of that cavity. Klinz‡ relates the history of a young man whose heart was placed perpendicularly in the

* Acta Academ, Scientiarum Succiæ, anni 1763, vol. xxiv. p. 27.

† Halleri Disputat. Anatomicæ Sel. vol. ii. p. 510.

‡ Ephem. Nat. Curios. vol. x. obs. 39.

pectoral cavity, and no trace of the left lung could be discovered.

But let us pass on to those displacements of the heart which occur during life, in consequence of certain diseases. We may distinguish two species of them; one in which the organ has only changed its direction, and another in which it is removed out of its natural situation. We have already spoken of cases where the heart was situated transversly in the thoracic cavity,* and we have said that this defect of position is frequently to be observed where there is considerable hypertrophy and dilatation of the heart. Other observers have found the heart situated perpendicularly, like that of quadrupeds. The examples of displacement of the heart are not very uncommon. Lancisi and Morgagni have spoken of them under the title of prolapsus of the heart, the only defective *position* mentioned in the work of Corvisart. In the cases where this organ has considerably augmented in size, it rests with its whole weight on the diaphragm, produces a depression, and becomes in part enveloped like a kind of pouch. A tumour which should compress the heart from above downward, as observed by Morgagni in a case of aneurism of the aorta, would produce the same displacement. Some have thought that prolapsus of the heart might also be the effect of a relaxation of the vessels, to which it is, as it were, suspended.

We observe an opposite defect in the situation of the heart, in those cases where a tumour of the abdominal viscera pushes the thoracic organs upward

* See Plate II.

toward the superior part of the cavity which contains them.

Sennert found the heart of a student *concealed* in the right cavity of the thorax, coinciding with a disease which had brought on a *consumption* of the left lung.* The various tumours of the pectoral cavity may, like those of the abdomen, push the heart out of its natural position, and force it into the right side, as happened in the case related by Sennert. Among a great many authors who have observed this kind of transposition of the heart, we ought to mention M. Larrey. In the case reported by this celebrated surgeon, the displacement of the heart, demonstrated by an inspection of the body, was produced in consequence of an *encysted dropsy*, or, perhaps, pleurisy with an effusion of the left pleura. During the life of the patient, the pulsations of the heart were felt under the right breast. Boerhaave,† at the opening of the body of the Marquis de St. Auban, found the heart thrown backward into the right cavity of the chest, in consequence of the compression produced by an enormous tumour situated in the left side of the thorax. These examples are sufficient to prove, undeniably, that the heart may be located in the right cavity of the chest.

We ought to remark, that the malpositions pointed out, have all been the result of some disease either of that organ, or of the pectoral or abdominal viscera; consequently, they ought to be considered as symptoms of other diseases, and not as primitive and essen-

* Practica, i. ii. p. 2 et 15. Lugd. Batav. 1650.

† Zimmerman Traite de l'Expen. i. iii. ch. iv.

tial diseases; an important distinction in regard to the treatment. The history of these displacements includes that of all those diseases which may compress the heart, and thereby give rise to this purely mechanical lesion.

The diagnosis of the defective positions of the heart is by no means difficult, especially in the present day, when we are in possession of a mode of exploration, the remarkable advantages of which have been so frequently noticed. We may therefore recognise the disease by the change of place where the pulsations of the heart are either seen, heard or felt; but this knowledge is of very little importance: the diagnosis of the principal disease should be the special object of attention with the physician. The dangerous consequences of the displacement of the heart relate entirely to the disease of which it is only a symptom. Brera thinks that the compression of the heart from any cause, may give rise to the symptoms which constitute angina pectoris. Testa, in combatting this idea, was led to believe that the causes which compress the heart exercise a yet greater compression on the lungs; so that we may, with the greatest reason refer angina pectoris to this compression of the lungs,—an opinion, however, which Testa did not propose.

SECTION VII.

OF THE CONCRETION OF THE BLOOD, VULGARLY DENOMINATED POLYPI OF THE HEART AND LARGE VESSELS.

It would take up too much room in this place to relate every thing that has been said respecting polypi of the heart in the discussions of the two last centuries. Bartoletti and Rossini were the first to give this name to the concretions so frequently met with in the heart; a term founded on the resemblance which they supposed they had discovered between these concretions and certain polypi of the uterus and nasal fossæ. Kerkring demonstrated that the formation of the concretions of the blood in the heart totally differed from those of polypi of the uterus and nasal fossæ, by producing similar coagulations, almost instantly, by injecting sulphuric acid into the blood vessels of living dogs. The objection of Kerkring lost much of its value when the polypi of the heart were afterwards distinguished into the *true* and the *false*. The last are formed by the coagulum of the blood, while red or partly white; the first consist of whitish dense concretions of a cellular texture. The distinction of polypi into true and false continued to prevail in the schools until Morgagni and Senac submitted this point of doctrine to rigorous criticism,

and even doubted the existence of *real* polypi. Lieutaud, afterwards, formally denied it. Pasta, in a work in other respects very ingenious, sought to demonstrate that all those pretended polypi of the heart were only the result of a spontaneous coagulation of blood, supervening after death, or only a few moments previously; and that all the histories of disease produced by the presence of such polypi have been considered in an erroneous point of view. Burserius afterwards revived the opinion of Malpighi, Manget, Pechlin, Peyer, F. Hoffmann, and J. B. Fantoni, in sustaining the opinion that polypi of the heart ought to be regarded as the causes of disease; and he maintained, at the same time, that they might be formed during life. This theory of polypi, however, still remained doubtful, and as it were vascillating; for although many physicians entirely rejected it, it obtained the assent of others. Corvisart, Testa, Burns, Kreisig, and M. Laennec, have occupied themselves anew with this most important question; and all have agreed in this point, that polypi may be formed during life, and that they may become the source of certain symptoms, connected with the disorders of the heart, which, in truth, it is very difficult to determine by sure and infallible signs. Farthermore, it is incontestable in the present day, that polypous concretions may form in the heart and large vessels a long time before death. Facts are not wanting to prove such an assertion: there is not, perhaps, a single vessel of considerable size in which the concretions in question have not been observed, and which are especially very common in the veins. The two venæ cavæ, the jugular veins, the vena portæ,

all the veins of the extremities, those of the lungs, the sinuses of the cranium, the carotid arteries, the arteries of the limbs, &c.: all these vessels have been found, in many cases, more or less completely obliterated by the formation of sanguine concretions, or polypiform masses. We have found similar concretions in the heart itself, and particularly in its right cavities.*

§ I.—ANATOMICAL CHARACTERS OF POLYPOUS CONCRETIONS.

Polypi of the heart and large vessels, formed after death, or in the last moments of life, are nothing more than common coagulated blood, which it is not necessary to describe. The concretions of somewhat longer standing are, for the most part, deprived of their red colouring matter; they somewhat resemble fibrinous masses, or, more correctly, certain pseudo-membranous productions. If the concretions are formed a longer time before death, their consistence is firmer; they adhere to the parietes of the heart, and frequently are so *entangled* in the meshes of the ventricles that they are broken on drawing them out: their resemblance to fibrine or muscular flesh boiled and deprived of its colouring matter, is still more apparent; and they present, in some measure, the first rudiments of organization. Finally, we sometimes meet with these concretions in an organized state, as may be seen from the cases in the note below.†

* See, in volumes ii. and v. of the *Archives Generales de Medecine*, the memoir of M. J. Bouillaud, on obliteration of the veins, and passive dropsies.

† A girl, eighteen years of age, had two enormous tumours on the right shoulder, and axilla of that size, for which she entered the Hotel Dieu, 26th of October, 1822. The superior right limb was swollen and *infiltrated*.

We think that the organization of polypiform concretions takes place in the same manner as that of false membranes, and that this is particularly the case in those which are the result of a phlegmasia of the internal membrane of the heart, which, for that reason, Kreisig has called polypous carditis, by comparing it to the angina of the same name.

The globular vegetations of M. Laennec, appertain to the polypiform concretions in question; which

The patient expectorated a large quantity of blood, which we perceived to have been furnished by one of the alveoli. The illustrious surgeon of that hospital employed the most rational means of removing these symptoms. The patient, however, was totally incurable, and died of her disease the 13th of December following.—The right auricle of the heart was found filled, principally, with a soft, almost gelatinous coagulum, containing in its centre vesicles filled with a semi-concrete fluid,† *interspersed with an infinite number of injected red or black vessels.* This polypiform concretion extended upwards into the vena cava superior, right subclavian and jugular veins, and was in some measure confounded with their parietes, which were strongly dilated; it was also prolonged into the right ventricle.—The superior extremities, and the face, were the *only parts infiltrated*, &c.

(Case, communicated by M. Senn, and extracted from the *Memoire sur l'Obliter. des Veines*, as well as the following recorded by Dr. Thibert.)

A commissioner, thirty-six years of age, entered the hospital of la Charité, in the month of March, 1817, and died with symptoms which authors, until the present moment, have attributed to an aneurism of the heart. The right cavities of the heart, besides blood recently clotted, contained portions of *organized fibrino-albuminous* matter, adhering to the parietes by filaments, which were unavoidably broken when removed, extending into the vena cava superior, and especially into the inferior, and obstructing almost completely the orifice of the pulmonary artery, &c.

Certainly, from the two interesting facts related in these few lines, we should be wonderfully incredulous, not to admit that polypiform concretions may be developed in the heart during life, and for a very long time before death. To these examples of the organization of sanguineous concretions, we may add the xxxvi. case of this work, which refers to a man who died of aneurism of the aorta. The lamellated coagulum, of which we have formerly given a long description, offered manifest traces of organization.

† It is not uncommon to meet with a coagulum of red blood, having, on its exterior, a large white polypous mass of rather long standing.

also, perhaps, have an important influence in the production of certain vegetations of the valves.

§ II.—FORMATION OF POLYPOUS CONCRETIONS.

After an attentive examination of a great number of facts, we are convinced that inflammation of the vessels, and an interruption or considerable obstruction to the course of the blood in their canal are, if not the only, at least the two principal causes, which induce the formation of polypiform coagulations. It would be rather difficult to tell in what manner inflammation produces the concretion of blood in the heart, or in the vessels; how the same phenomenon occurs after a remission or an interruption of the circulation. This explanation is so much the more difficult, as, in the actual state of physiology and chemistry, we do not well know by what mechanism the coagulation of blood taken from the vessels is effected. Let us be content, therefore, for the present, with noticing facts, in expectation that physiology may some day furnish the theory. Moreover, it is evident that all the causes capable of impeding or intercepting the course of the blood, such as ligatures of the vessels, their compression by tumours, &c., are calculated to produce the polypiform concretions which occupy us. Hence the reason why, at the approach of death, when the circulation goes on only in a slow and almost imperceptible manner, these polypous masses which we almost constantly meet with in the heart and large vessels, begin to form, and especially in the right side of the heart and the vessels which it receives or gives off. Hence the rea-

son why, if we practise blood-letting in a person who is about to die from the distress of a great obstruction to the circulation, the blood drawn is black, thick, half coagulated, and flows with much difficulty. We have before seen that the coagulum with concentric laminæ of certain aneurismal tumours are formed in the mode we have here explained; that is to say, by a subsidence of the circulation in the aneurismal sac.

§ III.—OF THE EFFECTS AND SYMPTOMS OF POLYPOUS CONCRETIONS IN GENERAL.

Certain phenomena and diseases have been attributed for a long time to these concretions, which depend upon some other organic affection of the heart. This opinion, of their polypiform origin, which is perfectly erroneous, prevailed very much about the middle of the last century, and physicians had so *popularized* it, that polypi of the heart were spoken of in the world at that time, in the same manner as *aneurism* is at the present day, and perhaps with as little precision. Who does not know that the celebrated Jean J. Rousseau journeyed all the way on foot to Montpellier, to seek advice for a *polypus* of the heart, which he certainly could not have done, had the illustrious melancholic really been affected with a disease the idea of which so seriously disturbed his ardent imagination.

The evident effects of polypiform concretions are to induce more or less obstruction of the circulation. Those which form in the last moments of life, in many diseases, and especially in those of the heart, considerably increase the obstruction to the

course of the blood, aggravate all the symptoms, and even determine syncopes, or death itself, when they obliterate, more or less completely, the cavities or orifices of the heart. M. Laennec thinks we may recognise these *polypi* of the heart when rather large by the following symptoms:—"When the pulsations of the heart which had all along been regular, suddenly become so abnormal, obscure, and confused, that we can no longer analyze them, we might suspect the formation of a polypiform concretion: if this difficulty occurs only on one side, the thing is almost certain."*

We should add that it is, perhaps, to the momentary presence of a polypous concretion in some one of the cavities of the heart, or their orifices, that we must attribute the bellows sound observed in some individuals, only at intervals. This kind of intermission of the symptoms we have noticed, announces a moveable and temporary obstacle, and prevents us from confounding it with the continuous tremor which accompanies the permanent contractions of the orifices.

Concretions of blood of very long standing, and even when organized, constitute permanent obstructions of the circulation, and produce different effects according as they occupy the heart and large vessels, or the vessels of moderate size. In the first case their effects are absolutely the same as those of which we have fully spoken in the chapter on the contractions of the orifices of the heart; that is to say, considerable dyspnœa, the most intolerable anxiety

* Auscult. Med., tom. ii. page 333.

and general infiltration:* in the second case, that is to say, when vessels of a moderate size are rendered impermeable by the presence of a fibrinous concretion, things proceed somewhat differently, accordingly as these vessels are arterial or venous. When they are arteries, as happens, for example, after a ligature which we are under the necessity of applying in certain diseases, the circulation is re-established by means of the collateral arteries, which dilate in a very remarkable manner, and soon there does not remain any symptom which would lead us to suspect an obliteration of the arterial trunk;† but if the vessels obliterated by fibrinous coagula appertain to the venous system, which is by far the most frequent, those are the phenomena which we observe. It happens sometimes that the course of the venous blood is established by means of a collateral circulation, as we have seen to have taken place in the case where a principal artery has been obliterated. In all cases nature is less ready, if we may be permitted to say so, to establish the current of the venous than that of

* It may happen, however, that dropsy is not general. Thus when the concretion occupies one of the venæ cavæ only, we sometimes observe an isolated infiltration of the superior parts, and sometimes a similar affection of the inferior parts, according as the obstacle is seated in the vena cava superior or inferior.

† Nevertheless, in some unfortunate cases, the collateral circulation either is not established, or becomes incapable of preserving heat and life in the extremities, where the principal artery is unfitted to convey the blood. Paralysis and gangrene of the extremities, are the deplorable accidents which this defect of arterial circulation induces. M. Rostan relates two interesting cases of paralysis of the extremities, produced by an obliteration of the principal artery, in his work on the softening of the brain. This paralysis and gangrene ought then to be ranked among the number of effects, and, consequently, symptoms which might lead us to suspect if not to recognise obliteration of the arteries.

the arterial blood. Also, most commonly, when the principal veins are obliterated, we observe an infiltration of the parts from whence these vessels bring the blood and serum. These partial dropsies denote an obstructed state of the circulation of the veins; and we may affirm that of all the causes capable of producing these passive dropsies, the most common is that which has been here noticed. This theory, founded on the most repeated observation, agrees in other respects admirably well with the physiological experiments which relate to the functions of the venous system.*

* Consult, for more ample details, the memoir on *Obliteration of the Veins*, inserted in the *Archives Generales de Medecine.*

SECTION VIII.

OF THE RECIPROCAL COMPLICATION OF THE VARIOUS DISEASES OF THE HEART.

Nothing is more uncommon, as we have already said, than to meet with cases where the heart is the seat of one affection only. On the contrary, the various lesions which we have studied individually, and in a manner somewhat abstract, are united together, two and two, three and three, &c., and form thousands of combinations. We meet with disease of the muscular substance, of the membranous substances of the organ, and of its vascular system at the same time; the same texture is sometimes the seat of different affections: thus we meet with the muscular parietes simultaneously dilated and hypertrophied, softened and hardened, and sometimes we meet with these four or even more diseases united. Contraction of the orifices is almost constantly complicated with dilatation and hypertrophy, of which it is one of the most frequent causes, &c. &c. It will be readily perceived that it is impossible for us to give any examples of these innumerable complications, or even to point them out. It is sufficient for us to observe that almost all the observations contained in this work are examples of it.

It is this complication of the diseases of the heart,

so common, and we might say inevitable, which has been the source of so many of the errors we have had occasion to notice in various parts of this work. It increases undoubtedly the difficulty of diagnosis; because frequently the existence of a given disease of the heart is in opposition to the manifestation of many of the symptoms of some other disease of that organ. Nevertheless we may be assured that with attention, and by recurring to all the modes of exploration which art possesses in the present day, an experienced physician will be able, in the great majority of cases, to recognise the principal lesion, and that very frequently, even, he may be able to ascertain with admirable facility the most inconsiderable affections, the diagnosis of which, to say the least, were very uncertain before the discovery of auscultation.

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Abdomen, Encysted dropsy of	By Dr. R. Coates.
——— Phlegmon and abscesses of	Dr. Hays.
——— Pulsations in	Do.
Abductors	Do.
Abepithymia	Do.
Aberration	Do.
Abies	Dr. Wood.
Abirritation	Dr. Hays.
Ablactation	Do.
Ablation	Do.
Abortion, (Obstet.) ..	Dr. Dewees.
——— (Med. Leg.)	Dr. Griffith.
Abortives	Do.
Abrasion	Dr. Hays
Abscess, Pathological Anatomy of Phlegmonous	Dr. Harris.
——— Cold	Do.
——— Metastatic ..	Do.
——— Treatment of	Do.

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TO THE

CYCLOPEDIA

OF

PRACTICAL MEDICINE

AND

SURGERY.

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PROSPECTUS.

This work will present a digest of the existing state of knowledge in all the branches of the healing art; in special, regional, abnormal, and general anatomy; in physiology, pathology, therapeutics, materia medica, pharmacy, hygiene, surgery, obstetrics, legal medicine and medical police. The main object of medicine, the curing and preventing of diseases, and affording relief for injuries, will be kept steadily in view, and the development which each subject will receive, and the mode of treating it will, in a great degree, be determined by its importance in reference to practical medicine. Whatever is truly philosophical in medicine is also useful, although the application of the science to the art requires much reflection and sound judgment; it is therefore not intended to restrict the term practical medicine, as has sometimes been done, to the mere description of the symptoms of diseases, and an enumeration of the remedies employed in their treatment; such a restriction is derogatory to the dignity of medical science, and degrades it to a gross empyricism.

In the preparation of this work, free use will be made of the *Dictionnaire de Médecine et de Chirurgie Pratiques*, the *Dictionnaire de Médecine*, the *Cyclopædia of Practical Medicine*, *Copland's Dictionary of Practical Medicine*, and of the *Encyclopädisches Wörterbuch der medicinischen Wissenchaften*, all now in the course of publication; and besides embracing whatever is valuable in them, it will contain a very large amount of new matter, principally relative to *American* medical practice and surgery.

Numerous divisions will be avoided, as unfavourable to the practical character which it is desired that this work should possess, and that the facility of reference so important in a work of this kind, shall not thereby be impaired, a copious index will be appended to the last volume.

Full explanations will be given of all medical terms, especially of those which modern discoveries have introduced into the nomenclature of the science, and without a knowledge of which, many of the books of the present day are almost unintelligible.

In short, it is intended that this work shall constitute a complete *Library of the Medical Sciences.*

Medical literature has now become so copious, the facts upon which the science is based are so numerous, scattered through such an immense number of volumes, and recorded in so many languages, that it is impossible for any physician whatever may be his industry or leisure to compass the whole. The value of, we might say the necessity for some such digest as the present, will therefore be at once admitted.

The highly respectable names on the list of collaborators, affords a sufficient guarantee for the ability with which the articles will be prepared. The editor has long been collecting materials for a work of this kind, and he possesses a larger collection of American medical works, than is to be found in any other library.

TERMS OF PUBLICATION.

The work will be published in parts *averaging* 112 pages each, illustrated with numerous wood cuts. It is expected that the work will be completed in forty parts, making eight large volumes. A part will be published every month if practicable.

Price to Subscribers 50 cents each part.

Gentlemen who are desirous to have the work forwarded to them, will please transmit their orders to the publishers, or to any of the Agents for the American Journal of the Medical Sciences, accompanied by a remittance of five dollars, which will pay for the first ten numbers.

In order that the postage on this work may not interfere with the extensive circulation, it is printed on a very large sized paper, so that no one part will contain more than five sheets of paper, thus making the postage within 100 miles, 7½ cents; or over that distance, 12½ cents.

We annex as a specimen a few pages of the work.

MM. Chevallier, Richard, et Guilleman, *Dict. des Drogues.*
Dr. Geiger, *Handbuch der Pharmacie.*
Geo. B. Wood.

ABIRRITATION. (From *ab*, priv. and *irritatio*, irritation.) This term has been employed by Broussais and his school, to denote a diminution of the vital phenomena in the different tissues. (See *Irritation.*)

Bibliography.—Caignou et Quemont. *Leçons du Docteur Broussais sur les Phlegmasies Gastriques.* Paris, 1823. p. 7.
Begin. *Principes Généraux de Physiologie Pathologique.* Paris, 1828. p. 126.
Broussais. *Principles of Physiological Medicine.* Trans. by Hays and Griffith, Philadelphia, 1832. pp. 28 & 29. I. H.

ABLACTATION. (From *ab*, priv. and *lacto*, I suckle.) The absence or cessation of lactation, (q. v.) This word, as originally employed by the Latin writers, was synonymous with our term *weaning*, (q. v.); but it has been restricted by some modern writers to this process as it relates to the mother. I. H.

ABLATION. (From *auferre*, to remove.) Formerly employed in a very extensive signification, and expressed the subtraction of whatever was in excess, in the body; the reduction of regimen; and the diminution of the mass of blood, by bleeding, &c. Its meaning has been much restricted by the moderns; and it is now principally used in surgery, as a generic term, expressive of all cases where a part is taken away. It includes two species, *Amputation* and *Extirpation*, (q. v.)
I. H.

ABORTION. *Abortus*, *Aborsus*, *Afluxio*, Lat. Αμβλωμα, εξαμβλωσις, Hip. Διαφθορα, ἐκτρωσμος, Aristot. *Avortement*, Fr. *Aborto*, Ital. *Falche Geburt*, *Fehlgeburt*, Germ. *Miscarriage*, Eng. The premature expulsion of the contents of the uterus after conception.

Art. I. Abortion. (*Obstetr.*) The contents of the uterus may be expelled, from the first few weeks after impregnation to the full period of utero-gestation. But the term Abortion, is usually confined to such cases of expulsion of the ovum, as happen before the fifth month; after this period, to near the full term, it is usual to call this accident by the name of *Premature Delivery*, (q. v.)

Causes.—Any thing capable of exciting uterine contraction to a certain degree, may be considered as a cause of abortion: these may be all mechanical violences; passions and emotions of the mind; sudden alarm; drastic purgatives; almost all the exanthemata, especially small-pox and scarlatina; peculiar conditions of the uterus itself, or of its connexions with the vagina, as first made known to the public by Madame Boivin, though not first observed by her; syphilitic taint; a rheumatic condition of the uterus itself; local plethora; the death of the fœtus, &c.

Some of the causes just enumerated, for instance, mechanical violences, are perhaps the most common; such are blows, falls, slips, over-exertion, &c. The next in frequency, are passions and emotions of the mind, alarms, &c.; while the peculiar condition of the uterus, as regards its condition with the vagina, and other portions of the lower part of the pelvic cavity, and rheumatism, are the most rare—the former seldom or never occurring but with such women as have had many children, or such as have been maltreated during labour, or who have suffered numerous abortions; the latter, only, perhaps, taking place from premature exposure to cold after delivery or abortion.

There is much diversity in the influence of the causes of abortion, owing, most probably, to a more or less healthfulness of the uterus itself. In some instances, the slightest of the enumerated causes will be followed by unappeasable contractions of the uterus; while in others it requires that they should be applied with great force to produce similar consequences.

Where organic derangements of the uterus exist, abortion takes place with great uniformity at a certain period of utero-gestation. In such cases, the uterus will not suffer distension beyond a certain degree, without being excited to contraction; because its organization is so deranged, as not to permit of distension without causing uterine contractions. The same effect is pretty constantly observed in the rheumatic condition of this organ.

Local plethora, in many instances, becomes a cause of abortion: this is most frequently observed in women with whom abortion becomes a habit; hence the frequency of this accident in certain females, even to the amount of a dozen consecutive times. This act readily establishes itself as a habit, because each time it takes place the uterus becomes the more readily disposed to plethora. That the fœtus may become diseased and die in utero, even at an early period of gestation, is supported by many facts; and when this is constitutional, as it sometimes is, the woman suffers abortion as certainly as impregnation takes place.

It has just been stated, that uterine contraction is essential to the throwing off of the ovum; and that the remote causes all tend, with more or less certainty, to produce this effort of the uterus. If this be admitted, there will be but little difficulty in explaining the symptoms that attend this accident.

Symptoms.—It rarely happens that abortion, or the disposition of the uterus to cast off its contents, is not preceded by pretty uniform phenomena: as, more or less pain in the back and loins, with a sensation of bearing down; lassitude; depression of spirits; and a more than natural disposition to make water. These symptoms are generally sooner or later followed by a "show," or a slight discharge of blood from the vagina, which will very soon, in some instances, amount to an hemorrhagy. Sometimes, and not very unfrequently, this "show" is the initial symptom; or, the aborting effort may commence by a sudden, and even an alarming discharge of blood; this especially happens to such as have had frequent repetitions of this accident.

The blood is expelled in coagula, or in a current, as the separation of the ovum is more or less extensive; or as the point of separation may be more or less remote from the os uteri; for a separation of the connecting medium of the ovum and uterus is a sine qua non to hemorrhage; at least, until after, perhaps, the sixth month. For up to this period, or nearly to this time, the ovum is almost entirely attached to the internal parietes of the uterus by the decidua and decidua reflexa, which subserves the offices of the placenta; but beyond this period, so much of the transparent portion (the membranes) of the ovum is formed, as to line a considerable part of the uterus; but from the detachment of which, no hemorrhage follows immediately, though eventually this separation may involve that of other portions, and thus produce a flooding of greater or less extent.

A flooding, however, is not a uniform attendant upon abortion; for the ovum is occasionally thrown off without this oftentimes alarming symptom; this, however, is confessedly rare, and perhaps only happens where no union was formed between the ovum and the uterine cavity.

Pain, like that of genuine labour, almost always accompanies abortion. At this we need not be surprised, as the action of the fundus and body of the uterus has to overcome the resistance of the neck of that organ, before the ovum can be expelled; and this is sometimes only accomplished by long-continued and frequently-repeated uterine efforts, and these oftentimes of the most painful kind.

At other times, this act is effected with very little suffering, or with a trifling expenditure of blood. This is more frequently the case with women who abort habitually.

The mammæ frequently sympathize with the uterus during the progress of abortion, or previously to its commencement. In the first instance, they become painful and a little swelled, if the process be slow and not very painful; in the second, it happens from the loss of vitality of the embryo or fœtus: when this takes place before any other symptom shows itself, it becomes the cause of uterine contraction; as the ovum now, from its loss of life, constitutes an extraneous body within the uterine cavity. These cases are rarely attended by as much pain, or by so great an expenditure of blood, as where abortion is suddenly produced by other causes, and where the ovum maintains its vitality perhaps to almost the last moment.

It is probable that the ovum has been deprived of its vitality in all such cases of abortion, as are attended, or preceded, by diarrhœa; and that those who have enumerated this condition of the bowels among the causes of abortion, have mistaken an effect for a cause; for however strongly the sympathy between the rectum and uterus may be insisted on, it must as confidently be declared, that it is reciprocal; and consequently, that the uterus, in such cases, may have been the original seat of irritation. This opinion is strengthened very often by the state of decay of the ovum at the time of its expulsion, but especially by the previous condition of the mammæ in such instances, as they are sure to have been tumid, and then to have become flaccid, before the escape of the ovum.

Sometimes, the first threatening of abortion is the sudden jet, or escape, of the liquor amnii. This, however, is rare, until after the sixth month, though it occasionally happens as soon as the second month. Uterine contraction and hemorrhage are sure to follow at no very distant period, and forbid success to any effort to prevent the expulsion of the other contents of the ovum.

The degree of hemorrhage is not always in the ratio of the advancement of gestation; though generally speaking, under similar circumstances it may be laid down to be the case; for the loss of blood, for the most part, is governed by the period of conception, the force of the remote cause, the degree or extent of detach-

ment, the vigor of the general circulation, the period that elapses before uterine contractions can be successful in the expulsion of the ovum, and the state of the ovum, that is, whether it remains entire, or has been forced open so as to expend the liquor amnii. Nor is pain always an attendant upon abortion, as many cases have occurred without it, though uterine contractions must take place.

Diagnosis.—The only complaint with which abortion can be confounded, is amenorrhæa when about to be relieved; but there is no very great difficulty in ascertaining the true nature of the pain and discharge of blood, especially in the married woman.

The married woman is rarely liable to suppression of the menses, without its having been preceded, by some pretty evident cause, as exposure to cold or wet, or some chronic disease, especially phthisis pulmonalis; or it may happen at that period of life at which the menses are preparing to take their final leave. When the first of these causes has produced the suppression, the married woman suspects herself to be pregnant, if she pass the common menstrual period, without bearing in mind at the moment, that she has exposed herself to any but the common or natural cause for this interruption. In these cases, nature very frequently overcomes the difficulty, after the obstruction has existed for two or three periods. The reappearance of the catamenia may now be mistaken for a threatening abortion; and the woman gives so effectually into the belief herself, that she immediately takes every precaution to prevent it.

In this case, for the most part, there has been none of the remote causes operating to produce abortion; though this would not with certainty betray the exact nature of the discharge, as abortion often takes place without any evident cause. The discharge, however, is not exactly alike in both instances. In abortion, we almost always have coagula expelled: not so, when it is merely the catamenial discharge. In abortion, the discharge is generally more suddenly abundant, and may be repeatedly arrested for a short time; whereas, in the menstrual evacuation, it is pretty uniformly continuous. Abortion is most frequently attended by alternate pains, which gradually augment, both in force and frequency: this rarely happens with the catamenia; for should the patient have pain, as in dysmenorrhæa, it gradually abates in its intensity, especially after the expulsion of a coagulum, or of a membranous substance; and if the woman have been subject to this form of menstruation, there is much less reason to suspect pregnancy; and consequently, we may doubt that she is about to miscarry.

In pregnancy, other signs present themselves beside the mere arrest of the menstrual discharge: such is morning sickness, increase of the abdomen, enlargement and tenderness of the mammæ, &c.

But after the third month, an examination per vaginam will almost always dispel the doubt, should any exist, especially if the flooding be attended by pretty severe and long-continued pain. This examination should never be omitted in cases of doubt, or where the symptoms have been of long continuance, as it will not only lead to a knowledge of the true nature of the complaint, but will furnish important indications; for if the mouth of the uterus remain undisturbed, it will encourage attempts to preserve the ovum; but on the other hand, if it be distended, or open, it will declare the insufficiency of every attempt to save the ovum. The difficulty in distinguishing the two conditions of the uterus, will diminish in proportion to the supposed advancement of pregnancy.

Prognosis.—The prognosis in abortion, will always depend upon the extent of the hemorrhage that may attend the process; and consequently will not differ from any other extensive loss of blood from the uterus, or even from other portions of the body.

Treatment.—The treatment of abortion will necessarily divide itself into general and local; and the indications must be taken from the immediate condition and habits of the patient; and will consist of attempts to prevent or subdue uterine contraction, and abate hemorrhage.

As uterine contraction must necessarily precede hemorrhage, the endeavour should be to interrupt, or overcome, the action of the uterus as early as possible, by rest in a horizontal position, by blood-letting, by opiates, a strict antiphlogistic regimen, and certain astringents.

1. *Rest.* This is essential to the successful treatment of threatened abortion; therefore, when a pregnant woman is exposed to either of the remote causes enumerated above, and this of sufficient force to excite anxiety for the welfare of the patient, she should be immediately cautioned against every circumstance that may tend to aid the operation of this cause, and be ordered to her bed, that the system may become tranquillized by a supine posi-

tion and perfect rest. This, however, may not always be sufficient of itself to intercept or subdue uterine contraction; it may therefore require the abstraction of blood from the arm as early as may be judged expedient.

2. *Blood-letting.* It rarely happens that this remedy can be dispensed with in habits disposed to be plethoric, and is often of singular benefit in opposite temperaments, when arterial action is roused beyond the healthy bounds; the loss, therefore, of a few ounces of blood is absolutely necessary, when there is a painful aching in the back, a heaviness about the loins, a sense of weight or bearing down, even without pain, but *especially* when there is pain, and when there may be a "show" from the vagina. The loss of eight or ten ounces of blood from the arm, and a strictly antiphlogistic regimen, will not only tend to tranquillize the circulating system, but will prepare the way for the employment of opiates.

3. *Opiates.* Opium, in some form or other, is oftentimes of the highest consequence, and should never be omitted after the system is properly prepared for it by rest, and, if necessary, by blood-letting. Much judgment is, however, required for its exhibition, that it may not do injury. It should never be given when the pulse is highly excited, or when its operation is habitually unfriendly to the system. In the first instance, it should be preceded by rest and the loss of blood; in the second, the Ext. Hyosciam. may be substituted with much advantage. In such cases this remedy should be given in proper quantities to calm the system; and it must be repeated in sufficient doses, and at proper intervals, to overcome uterine contraction. It may be administered by the mouth; or by the rectum, in the form of injection, or suppository.

The use, however, of opium has its limit; for it must not be persevered in after it is ascertained that it would be neither useful nor practicable, to subdue uterine contraction; and this must be ascertained by an examination per vaginam, as recommended above, and if the os uteri be found open, or the neck distended, it would be hurtful to persevere with the opium; or when the mammæ have become suddenly flaccid, after having been distended and painful, it would be found equally useless; for in this instance, the embryo, or fœtus, has certainly lost its life, and it would be mischievous to interrupt pains, as it is by their agency alone that the lifeless ovum can be expelled; and the quicker this is done, the better for the safety of the mother.

4. *Regimen.* It would, in many instances, be altogether unavailing to attempt preventing abortion by the means above suggested, if they were not aided by a proper diet. This is too commonly supposed to be a matter of no moment in the treatment of abortion; but this is an error of great magnitude, and it should not be lost sight of that it is so. None other than the blandest vegetable substances should be given, and these without any seasoning; therefore, every species of liquor, or even spices, should be prohibited, during the active, or commencing stage of abortion. Water, toast-water, barley-water, gum-water, or weak lemonade, should alone be given as drinks; and even these should be administered with a proper regard to the rest, or absence of motion, of the patient.

5. *Certain astringents.* The astringents most to be relied upon are the acetate of lead, the extract of rathany, and red rose-leaf tea. The acetate of lead may be given in doses of two to six grains, every hour or two, guarded by opium, as the hemorrhage may be more or less alarming. If it offend the stomach, it can be given per anum in form of an injection. Twenty grains of the acetate, sixty drops of laudanum, and two or three ounces of water, will be the proper proportions. Six or eight grains of the extract of rathany may be given every hour or two, drinking after it a wine-glass full of red rose-leaf tea, made as follows; half an ounce of the leaves must have a pint of boiling water poured on them and allowed to stand—strain off a wine-glass full, as wanted—it may be sweetened, if preferred. If there be pain when the rathany is exhibited, it will be proper to aid it by opium, as above directed.

Local treatment. This only becomes necessary when an hemorrhage is present; and as this will differ in degree, it will require remedies proportionate to its extent. These applications will consist of cold water, vinegar, or brandy; the tampon, and the crotchet.

The cold wet applications are placed upon the lower part of the abdomen and vulva—their coldness may be increased, if desirable, by the addition of ice. These appliances are oftentimes highly useful, but must not be carried too far—that is, to the prostration of the system; therefore, when the pulse becomes feeble, concentrated, and frequent, the cold remedies should be desisted from, and not repeated

until the system shows a disposition to react. During this time, the feet and legs should be kept warm by artificial means.

The tampon must be resorted to, as soon as the flooding becomes rather excessive —a piece of soft sponge of sufficient size is the best, and should be introduced into the vagina after lubricating it well with melted hog's lard; it should not remain longer within the vagina than twelve hours without being changed. It must not be crammed into the passage with such strictness as to obstruct the flow of the urine; and it should never be introduced into the neck of the uterus. This is certainly the most efficacious means of arresting this kind of hemorrhage; and its employment must not be too long delayed.

The crotchet consists of a piece of steel of the thickness of a small quill at its handle, and gradually tapered off to its other extremity which is bent to a hook of small size. (See accompanying figure, which represents the instrument one third the natural size.) This instrument is highly useful in cases in which the flooding continues after the ovum has been broken and its contents expelled. A portion of the involucrum sometimes insinuates itself into the neck of the uterus, and prevents the degree of contraction necessary to interrupt farther bleeding. This accident most frequently attends the earlier abortions. As hemorrhage is maintained by the cause just named, it suggests the propriety of never breaking the ovum; especially before the fourth month. When the flooding is maintained by this cause, it will not cease but upon the event of its removal. This condition of the placenta and neck of the uterus is easily ascertained by an examination; it will readily be felt to be embraced by the neck of the uterus; and though a portion may protrude a little distance below the os tincæ, it cannot be extracted by the fingers; for the os uteri or cavity of the uterus will not be sufficiently large to permit the fingers to pass into it, that this mass may be removed; the crotchet should then be substituted; the mode of using it is as follows: The fore finger of the right hand is placed within or at the edge of the os tincæ; with the left we conduct the hooked extremity along this finger, until it is within the uterus; it is gently carried up to the fundus, and then slowly drawn downwards, which makes its curved point fix in the placenta; when thus engaged, it is gradually withdrawn, and the placenta with it. In every case in which I have used it, the discharge has instantly ceased.

Prophilaxis. It has been noticed above, that aborting frequently becomes habitual —and when it is so, it has been found very frequently difficult to interrupt it, unless very rigid and exact means be employed. The following plan will almost always succeed, if regularly pursued.

1st. The patient must be confined to her bed, or preferably to a mattress, as quickly as practicable after she overruns a menstrual period. On this she must content herself to remain, almost without motion; but certainly without exertion.

2d. She must lose, by leeches or cupping, about four or five ounces of blood, from the inner side of the thigh, four or five inches above the knee, the week previously to the next menstrual period; and this operation must be repeated, again and again, at the respective periods—or in other words, every four weeks.

3d. The bowels should be kept well regulated, by medicine of the mildest kind, as castor oil, magnesia, Seidlitz powders, &c., but purging must be avoided.

4th. She must be kept as strictly upon a milk and vegetable diet, as the condition of the stomach will permit.

5th. Sexual intercourse should be strictly prohibited.

6th. This plan must be persevered in for at least two months after the period at which the patient was usually wont to miscarry.

7th. Blisters to the abdomen or sacrum have occasionally been found useful in interrupting the aborting habit. They are, however, not only inconvenient, but sometimes very troublesome, without proving effectual; they should therefore be looked upon as a dernier resource. We recommended their use more than twenty years ago. (See Amer. Edit. of *Rees' Cyclop.* Art. Abortion.) They have since been recommended by Dr. Jackson, of Northumberland, and others. (See *Bibliography* to this article.) We have not, however, had recourse to them for some years past, for the reasons above stated, and from having found, in a great number of cases, the plan just laid down, to be attended with the most entire success.

Wm. P. Dewees.

Bibliography.—Albinus. *Diss. de abortu.* Franc. 1699. in 4to.

Stahl. *Diss. de abortu et fœtu mortuo.* Halæ, 1704. 4to.

Bohn. *De abortu salubri.* Lipsiæ, 1717. 4to.
Stoll. *De abortu,* in Diss. Med. edit. Egerel. T. IV.
Detharding. *De Fœtûs immaturi exclusione.* Rostoch. 1748.
Jasserini. *De abortu.* Vien. 1777.
Gruner. *De abortivis.* Jena, 1799. 4to.
Mayer. *Aphorismi de causis abortum provocantibus.* Francf. 1780. 4to.
Waldschmidt. *De abortûs facti signis,* &c. Kilon. 1723.
Becker. *De abortu.* Göt. 1798. 4to.
Gregorini. *De hydrope uteri et hydatidibus.* Halæ, 1795.
Siebold. *Von den Frühgeburten in dessen Handb. zur Erkenntnisz und Heilung der Frauenzimmer Krankheiten.* Frank. 1823.
Siebold. Art. *Abortus.* Encyclopädisches wörterbuch der Med. Wissens. Berlin, 1828.
Le Roy. *Leçons sur les pertes de sang pendant la grossesse et sur les fausses couches.* Paris, 1801.
St. Germain. *Traité des fausses couches.* Paris, 1655.
Redman. *Diss. de abortu.* Lugd. Bat. 1748.
Pensens. *Diss. sur l'avortement.* Paris. an. XIII. 4to.
Duges. *Sur les causes de l'avortement.* Revue Méd. for 1824. Tom. III. p. 74. Ibid. *Manuel des accouchemens.* Paris, 1830.
Audry. *Sur les maladies du fœtus et ses annexes.* Journ. des Progres. Paris, 1830. I. 126.
Boivin. *Recherches sur une des causes les plus frequentes et les moins connues de l'avortement.* Paris, 1828.
Gardien. Art. *Avortement.* Dict. des Sc. Méd. Paris, 1812. Tom. II.
Desormeaux. *De abortu.* (Thèse de concours.) Paris, 1811. Ibid. Art. *Avortement.* Dict. de Méd. Paris, 1821. T. III.
Duges. Art. *Avortement.* Dict. de Méd. et de Chir. prat. Paris, 1829. T. III.
Velpeau. *Elementary treatise on midwifery.* Translated by C. D. Meigs, M. D. Philad. 1831. p. 229.
J. Burns. *Obs. on abortion.* London, 1806. 8vo. Ibid. *Principles of Midw.* with notes by Prof. James. New-York, 1831.
Stewart. *On the causes which destroy the fœtus in utero.* Med. Chirurg. Trans. V. 144.
Denman. *An introduction to the Pract. of Midwifery.* With notes and emendations by J. W. Francis. New-York, 1829. p. 540.
Ramsbotham. *Pract. Obs. in Midwifery.* London, 1832. p. 357.
Ryan. *Manual of Midwifery.* 3d Ed. London, 1831. p. 462.
Gooch. *Pract. compend. of Midwifery,* &c. prepared for publication by G. Skinner. Philadelphia, reprint, 1832.
S. Bard. *Compendium of Midwifery.* 5th Ed. New-York, 1819.
Baudelocque. *Midwifery abridged.* With notes by W. P. Dewees, M. D. Philad. 1823.
W. P. Dewees. *A treatise on the diseases of females.* 4th Ed. 1833.
E. Hale. *Obs. on abortion.* Med. Dissertations, read at the annual meetings of Massachusetts Med. Assoc. Boston, 1829. Vol. IV. p. 357.
L. Belden. *Observations on the utility of continued venesection in the prevention of habitual abortion.* New-York Med. and Phys. Journ. for April, 1829. p. 30.
J. J. Graves. *Remarks on the increase of still-born children and abortions.* New-York Med. and Phys. Journ. for April, 1829. p. 37.
S. Jackson, of Northumberland. *On the use of blisters in threatening abortion,* &c. Am. Journ. of Med. Sc. Philad. 1828. Vol. II. p. 299.
A. H. Cenas. *Case of threatened abortion arrested by a blister to sacrum.* Same Journal. Vol. V. p. 547.
R. L. Fearn. *Case in which abortion was prevented.* North Am. Med. and Surg. Journ. Philad. 1831. Vol. XI. p. 251.

I. H.

Abortion. (*Medico-legal.*) When judicial investigations are instituted in cases of real or suspected abortion, the principal points on which the medical witness will be examined, are, 1st. Has abortion really taken place? 2d. if so, was it the effect of natural causes, or was it artificially and intentionally produced?

1. *Has abortion really taken place?*—This is to be ascertained by a careful examination of the product of the premature labour, and of the female who is said to have aborted; and the chain of evidence will necessarily be defective if either of these examinations be neglected.

Examination of the embryon. To render this satisfactory, the changes that the embryon undergoes from the period of conception to the end of the ninth month, must be borne in mind. During the first weeks, the embryon being exceedingly small, may be confounded with a mole, a coagulum of blood, &c. The substances which are said to have been expelled from the womb must therefore be carefully examined, by being washed in clear water, taking care not to injure them by compression or otherwise. If they be composed of a coagulum only, this will be dissolved for the most part, leaving only the fibrine. If the expelled substance be a mole, it may be recognized by its solid consistence and other peculiar characters. (See *Mole.*) But if a fœtus be present, it will present certain signs of organization which are more or less striking, according to the age of the embryon.

Until the fifteenth day after conception, the uterus contains only the rudiments of the ovum, no part of the future embryon being distinguishable. At this period, however, Meckel states that the ovum is six or eight lines in diameter, containing an embryon whose form has not unaptly been compared to that of a tadpole, and about three to four lines in length. At the end of the first month, the thorax and abdomen begin to appear in the form of round tubercles. At two months, the head is as large as half the body, the spine is formed, and the various parts of the face begin to be visible, whilst the extremities, although imperfectly formed, are readily distinguish-

able; and about the thirteenth week the sex may be determined. The embryon is now about two inches in length, and weighs rather more than an ounce.

After this, no mistake can or ought to be made by the most inexperienced obstetrician. At the seventh month, the infant being so fully formed as to be capable, with certain precautions, of enjoying an independent existence, any questions that may arise belong rather to infanticide (q. v.) than to abortion.

Examination of the woman. After having ascertained that the product examined was an embryon, and at what term of utero-gestation it had been expelled, the next point to be determined is the state of the mother; and the value of this examination depends in a great measure on its being made at an early period, as well as on the period of utero-gestation, at which the abortion has taken place. Actual inspection is of little use where more than a week has elapsed, as in that time the parts have so far regained their natural condition as to embarrass or even baffle inquiry. The period which has elapsed from conception has also much influence, as the derangement of the parts consequent on the expulsion of the fœtus, will, in most cases, be in a direct ratio to its age. But in every instance, if the abortion has occurred some time previous to the examination, and the woman has recovered, the fact must be proved by circumstantial evidence; and the fact of the expulsion of the embryon, can only be inferred, from pregnancy having existed. It should also be borne in mind, that the expulsion of moles, hydatids, &c., may induce the same appearance of the parts, as the passage of a fœtus through them. It is therefore evident, that no legitimate deduction can be drawn from the phenomena presented by the woman, however strong the presumption may be, without a concurrence of the following circumstances.

1. A certainty of the previous pregnancy, and comparison between the development of the fœtus and the period of utero-gestation at which the abortion was said to have taken place. 2d. Such an advanced stage of pregnancy, as to produce, with the effects of the labour, certain well-known changes in the uterus and vagina. 3. Finally, the examination having been made soon after the presumed abortion took place.

2. *Was the abortion the effect of natural causes, or was it artificially produced?* In ascertaining this, concomitant or collateral circumstances should be allowed much weight; as concealment of the pregnancy and an application for medical aid without an acknowledgment of its existence; the purchase and use of reputed abortives, &c.: and, on the other hand, of resort to professional assistance when miscarriage was expected, and the fact of the occurrence of any event capable of producing premature labour.

As the natural causes which may induce abortion have been already fully explained, it is unnecessary to advert to them in this place. The methods employed in order to excite the expulsion of the embryon, may be referred to two general heads; those which act through the general system of the parent, and those which are applied immediately to the uterus and its appendages. To the first class belong emetics, cathartics, and emmenagogues; and to the latter, the application of leeches to the vulva, and mechanical violence.

With regard to the first class, it should be remembered, that certain drugs are generally supposed to be endowed with the power of causing the expulsion of a fœtus, and although it is now generally admitted by practitioners that there are no abortives strictly speaking, the circumstance of the purchase and administration of one or more of these articles ought to be allowed an important bearing on the case. There is no doubt, however, that emetics, purgatives, &c., are capable of producing abortion, particularly in females predisposed to it; but there is no one article, the result of whose internal administration, is abortion and nothing but abortion; the life of the mother is always endangered. There is no drug, says Dr. Male, which will produce miscarriage in women who are not predisposed to it, without acting violently on their system, and probably endangering their lives; and in this opinion he is upheld by almost every medical authority of any note.

The abortive means which act directly on the womb and its appendages or contents, are much more certain in their effects, but at the same time are more dangerous to the female. They consist in the application of mechanical irritation to the uterus and its contents, by the actual introduction of some instrument, the injection of acrid substances into the vagina, or the employment of such external violence as will irritate or injure the uterus. As respects bleeding from the foot, and the application of leeches to the vulva, though sometimes resorted to for the purpose of producing abortion, they seldom or never will cause this phenomenon, without be-

ing pushed so far as to reduce the female to a dangerous state of debility; in fact, when used moderately, they will in certain cases avert this event.

When a physician, or practitioner of midwifery, is called upon as a witness in cases of suspected abortion, his duty is to verify the fact of the abortion having taken place; and, when he has satisfied himself that this was the case, to inquire into all the circumstances which preceded, accompanied, and followed this event: thus he is to examine whether it might not have been induced by natural or accidental causes; what was the term of utero-gestation; if, from the existence of some concomitant disease, the woman had freely employed reputed abortives; and, in short, to make every inquiry that may tend to elucidate the real cause of the event. On the other hand, it is also his duty to the laws, scrupulously to weigh every circumstance which may tend to show that the abortion was premeditated on the part of the female or others. Hence, he is to ascertain whether the pregnancy was concealed, whether reputed abortive, drugs were administered, whether she was solicitous to learn how abortion could be produced, &c. The fœtus and its envelopes should also be carefully examined, to discover whether they bear any marks of an instrument having been used; and in case of the death of the woman, a careful inspection of the uterus and its appendages should be made, with the same intent.

Laws in relation to abortion. The legislative enactments in the United States, respecting abortion, differ greatly from each other, whilst in some, the common law of England, as it stood at the Declaration of Independence, is still the rule of action. The English law, as stated by Blackstone, is: "If a woman is quick with child, and by a potion or otherwise killeth it in her womb, or if any one beat her, whereby the child dieth in her body, and she is delivered of a dead child, this, though not murder, was by the ancient law, homicide. But the modern law doth not look upon this offence in quite so atrocious a light, but merely as a heinous misdemeanour." This, being common law, is therefore in force in such of the United States as have no special legislative enactment on the subject. The law of England now in force under the act of 1803, being statute and not common law, has no force here.

By the revised statutes of New-York, "Every person who shall wilfully administer to any pregnant woman, any medicine, drug, substance, or thing, whatsoever; or shall use or employ any instrument or means whatever, with intent thereby to procure the miscarriage of any such woman, unless the same shall be necessary to preserve the life of such woman, or shall have been advised by two physicians to be necessary for that purpose;" shall, upon conviction, be punished by imprisonment or fine, or both.

The law in Louisiana is very full and explicit, condemning any person who procures or is privy to the procurement of abortion, to imprisonment, unless it is procured by medical advice for the purpose of saving the life of the mother. If death ensues from attempts to procure unlawful abortion, it is murder.

In Connecticut, it is imprisonment for life, or such other less term as the court may award. It is evident that where express provision to the contrary has not been made, the medical practitioner is placed in a disagreeable predicament. To save the life of the mother he is often called upon to produce abortion, and yet in all these cases he is criminal in the eye of the law, strictly speaking. At the same time, it is highly improbable that such cases will ever become the subject of judicial investigation; but still, whilst the law thus views him in the light of a felon, no obstetrician should rely on his own judgment alone, in cases thus involving the necessity of the destruction of the fœtus, and the possibility of a fatal result to the mother.

Bibliography.—M Alberti. *De abortus vi olenti modis et signis.* 4to. Halæ, 1730.

F. P. Zacchias. *Questiones medico legalis* Folio. Lugd. 1674.

T. E. Fodere. *Traité de Médecine légale,* &c. 6 tomes. Paris, 1813.

I. Briand. *Manuel complet de Médecine légale* Paris, 1828.

J. Capuron. *Médecine légale relative à l'art des accouchemens.* Paris, 1821.

T. Cooper. *Tracts on Medical Jurisprudence.* Philada. 1819.

J. G. Smith. *Principles of Forensic Medicine.* London, 1821.

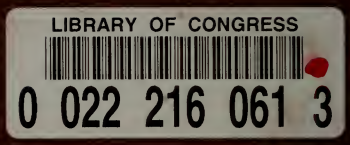
Paris and Fonblanque. *Medical Jurisprudence.* 3 vols. London, 1823.

T. R. Beck. *Elements of Medical Jurisprudence.* 2 vols. Albany, 1823.

M. Ryan. *Manual of Medical Jurisprudence,* &c.; with Notes by R. E. Griffith, M. D. Phila. 1832, &c.

R. E. Griffith.

ABORTIVES. This term has been applied to a class of remedies which were supposed to act in a special manner on the gravid uterus, causing an expulsion of its contents. The whole of them, with the exception, perhaps, of Ergot, act by their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